amateur radio

Vol. 36, No. 3
MARCH
1968

30c

Registered at G.P.O., Melbourne, for transmission by post as a periodical

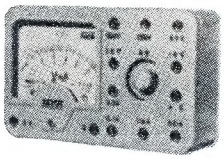
VERNIER DIALS

Ratio 8 to 1 Reduction, Scaled 0-10.

Type T 501 1½ inch diameter $1.75
,, T 502 2 inch diameter $2.20
,, T 503 3 inch diameter $2.80

FERROCART POCKET MULTIMETER

MODEL PT34



300 uA. movement.

AC and DC voltages: 0-10, 0-50, 0-250, 0-500, 0-1,000 volts.

Current ranges (mA.): 0-1, 0-100, 0-500 mA.

Ohms range: 0-100,000.

Size: 3¾ x 2½ x 1¼ inches.

PRICE $5.75. Complete with leads.

BATTERY SAVER or A.C. ADAPTOR

A & R TYPE PS64

- **Unlimited operation of Battery operated Transistor Equipment from 240 volt AC Mains at negligible power cost.**
- Ideal for 6 or 9v. Transistor Radios, Tape Recorders, Transistorised Small Amplifiers, and Test Equipment.
- Approved by Electric Supply Authorities.
- Maximum voltage limited to 7.75v. or 11v. at low current to protect transistors and capacitors.
- Filtered to ensure hum-free operation.
- 6 or 9v. (nominal voltage) selected by external switch.

SEMICONDUCTORS

TRANSISTORS

AC107 .. .. $1.90
AC125/OC70 .. .. 90c
AC126/OC75 .. .. 90c
AC127 .. .. $1.00
AC128 .. .. 95c
2-AC128 .... $2.25
AD149/OC26 .. .... $2.25
AF114N/OC171 .... 95c
AF115N 95c
AF116N/OC170 .... 90c
AF117N/OC169 .... 90c
AF118N $2.00
ASZ20/2N370 .. .... 90c
AT126/AC126 .. .... 90c
AT310 Silicon 95c
AT311 Silicon 95c
AT312 .. .. 98c
AT313 .. .. $1.00
AT314 .. .. 90c
AT315 .. .. 95c
AT316 .. .. 95c
AT113A/OC35 .. .... $3.25
BC107 .. .. $1.00
BC108 .. .. 90c
BC109 .. .. $1.30
BF115 .. .. 90c
OC26/AD149 .. .... $2.25
OC30 .... $4.10
OC35/AT1138A $3.25
OC44N 90c
OC45N 90c
OC70 .... $1.16
OC71/2N215 .... 75c
(or three for $2)
OC71 .... $1.25
OC72 .... $1.25
OC74N/AC128 .... 95c
OC202 .... $3.00
2N370/ASZ20 .. .... 90c
2N410 .... 85c
2N278 Delco $3.00

GERMANIUM SILICON AND ZENER DIODES

BA100 .. .. 45c
BY100 .. .. $1.55
OA5 .... 70c
OA79 .... 30c
OA90/OA80/
1N34A 30c
OA91/OA81 .... 30c
OA200 .. .. 70c
OA202 .. .. 75c
OA210/1N1763/
1N3194, HR25,
400PIV, 400 mA. 85c
OA211/BY100/
S1AR2, 1000PIV
1 amp. $1.60
OA605/1N3193 .... 55c
OA650 .. .. $1.10
OAZ200 .... $1.50
OAZ202 .... $1.50
OAZ203 .... $1.50
OAZ205 .... $1.50
OAZ208 .... $1.25
OAZ212 .... $1.25
OAZ213 .... $1.25
OAZ222/BZZ14 .... $2.00
OAZ224/BZZ16 .... $2.00
OAZ225 .... $2.00
ORP12 Light sens.
1N3194/OA210 .... 85c
1N3193/OA605 .... 55c
1N3491 50PIV, 18a. 95c
1N3491R 95c
1N3492 100PIV 18a. $1.20
1N3492R $1.20
1N3493 200PIV 18a. $1.30
1N3660 100PIV 25a. $1.55
1N3660R $1.55

WE HANDLE C.O.D.

CHASSIS—ALUMINIUM

Type 1: 5 in. x 3 in. x 2 in. 75c
,, 2: 6 in. x 4 in. x 2 in. 80c
,, 3: 8 in. x 5 in. x 2½ in. $1.00
,, 4: 10 in. x 6 in. x 2½ in. $1.25
,, 5: 11 in. x 8 in. x 2½ in. $1.50
,, 6: 13 in. x 7 in. x 2½ in. $1.50
,, 7: 13 in. x 10 in. x 2½ in. $1.75
,, 8: 17 in. x 8 in. x 3 in. $2.15
,, 9: 17 in. x 10 in. x 3 in. $2.46
,, 10: 17 in. x 12 in. x 3 in. $2.62
(Pack and Post 40c)

WELL KNOWN GERMAN MAKE

RECORDING TAPE

In Round Plastic Pack. Professional Quality

3 in. 300 ft. .... $1.65 5¾ in. 1200 ft. $4.00
3 in. 450 ft. .... $2.75 5¾ in. 1800 ft. $6.25
4 in. 900 ft. .... $4.30 5¾ in. 2400 ft. $8.40
5 in. 600 ft. .... $2.40 7 in. 1200 ft. $4.20
5 in. 900 ft. .... $3.50 7 in. 1800 ft. $5.50
5 in. 1200 ft. .... $4.50 7 in. 2400 ft. $7.50
5 in. 1800 ft. .... $7.20 7 in. 3600 ft. .. $13.00
Tape Cups 8c each

CO-AXIAL CONNECTORS

AMERICAN TYPE:

PL259 Co-axial Plug 95c
4087-1 Co-axial Plug (PL259, PTFE) $1.45
SO239 Co-axial Socket (suit PL259) 90c
4802-1 Co-axial Socket (PTFE) $1.47
C32-14 Co-axial Double Ended Female Cable Joiner (PTFE) $1.75
UG175U Adaptor for PLT59, to suit ¼ in. cable 28c
C32-17 Co-axial "T" Piece, suit PL259) $2.32

BNC SERIES:

UG88 CU Co-axial Plug (PTFE) $1.58
UG290/U Co-axial Socket (PTFE) $1.25

BELLING LEE TYPE:

Co-axial Plug, suit ¼ in. Cable 40c
Co-axial Socket 35c
Co-axial Socket (flush mount) 35c
Co-axial Cable Joiner (female) 40c

ROBLAN BROADCAST GANGS

RMG1 Single Gang, 10-50 pF. .... /1.65
RMG1 Single Gang, 10-415 pF. 1.85
RM92 Two Gang, 10-415 pF. 2.50
RMG3 Three Gang, 10-415 pF. 3.35
(Pack and Post 20c)

ELECTROLYTIC CAPACITORS

Subminiature, P.V.C. Sheath, Pigtail & Chassis Type

uF.	D.C. W.V.	Price	uF.	D.C. W.V.	Price
1	350	30c	50	150	60c
2	12	25c	50	350	70c
4	350	40c	50 plus 50*	350	$1.35
4	500	45c	100	6	30c
5	6	25c	100	12	30c
5	12	25c	100	15	30c
8	350	45c	100	25	45c
8	500	50c	100	50	55c
10	6	25c	100*	200	85c
10	12	25c	100	350	$1.45
10	25	30c	100 plus 50*	400	$2.00
10	50	30c	200*	350	$1.70
16	350	45c	250	6	30c
16	450	55c	250	12	45c
16	500	65c	250	15	50c
24	350	50c	250	25	50c
24	500	80c	250	50	85c
25	25	30c	500	6	45c
25	50	35c	500	12	65c
30	6	25c	500	15	65c
30	12	25c	500	25	70c
32	350	65c	500	50	$1.15
32	500	95c	1000	15	85c
50	6	30c	1000	25	$1.20
50	12	30c	1000	60	$1.25
50	15	30c	2000	15	$1.00
50	25	40c	2000	25	$1.35
50	50	40c	* P.V.C. can type		

VIDEO PEAKING CHOKES

MINIATURE PIGTAILS, IRON CORE

Sizes available: 15 uH., 22 uH., 27 uH., 33 uH., 39 uH., 47 uH., 56 uH., 68 uH., 82 uH., 100 uH., 120 uH., 150 uH., 180 uH., 220 uH., 270 uH., 330 uH., 390 uH., 470 uH., 560 uH.

Price 40c. Postage 10c.

S.W.R. METERS, Model KSW-10

Specifications: Standing Wave Ratio: 1:1 to 1:10. Accuracy: Plus or minus 3% scale length. Impedance: 52 ohms and 75 ohms. Meter 0-100 DC microamperes. **Price** $9 inc. tax.

BEZALS AND NEON INDICATORS

Sato 3280 6-8 volt subminiature; red, green, and blue 45c
NEZ Neon Indicator, 65 volt, flying leads .. 30c
230 volt red Neon Bezal 65c

SPECIALS

NEW VALVES IN STOCK TO CLEAR

6AC7 50c ea., 5 for $2 6J7 .. 50c ea., 5 for $2
6AG5 25c ea. 10 for $2 EA50 10c ea. 12 for $1
12SR7 50c ea., 5 for $2 958A 50c ea., 5 for $2
7E6 .. 35c ea., 8 for $2 6U7G 50c ea., 5 for $2
7A8 .. 35c ea., 8 for $2 2C26 50c ea., 5 for $2
6SH7 50c ea., 5 for $2 6J6 .. 75c ea., 3 for $2
7C5 .. 50c ea., 5 for $2 RL18 75c ea., 3 for $2
7W7 .. 35c ea., 8 for $2 1625 .. 50c ea., 5 for $2
6H6GT 20c ea. 12 for $2 6SJ7 75c ea., 3 for $2
954 .. 50c ea., 5 for $2 866A $1.25 ea., 3 for $3
807 .... $1 each 100TH .... $3 each

CATHODE RAY TUBES

5BP1 5 inch CRT, $5.

Please allow for Postage and Packing.

PLUGS AND SOCKETS

Octal Plug .... 35c each
Octal Socket .... 15c each
4-pin Speaker Plugs and Sockets .... 18c each
Pye Plugs .... 20c each
Pye double bulk Chassis Sockets .... 25c each

MICROPHONES

BM3 Crystal, Pencil Type, with on-off switch $5.00
DF2 Dynamic, Tape Recorder Type, 50 ohm or 50K ohms available $5.00
DF3 Dynamic, Pencil Type, 50 ohm or 50K ohms available $9.00
B1051 Dynamic, Thin Pencil Type, polished aluminium finish, response 15-15Kc., 50K ohms only $7.50
B1052 Dynamic, Dual Impedance Pencil Type, 600 ohm and 50K ohm, response 15-15Kc. $11.50
B1053 Uni Directional Slim Pencil Type, dual impedance, 500-50K ohm, response 15-15Kc. $18.00
B1401 Microphone Stand, Desk Type $2.50

SPEAKER TRANSFORMERS

Well Known Make, "E" Type

5,000 ohms to 3.5 ohms $1.85
5,000 ohms to 15 ohms $1.85
7,000 ohms to 3.5 ohms $1.85
7,000 ohms to 15 ohms $1.85

"C" Type

7,000 ohms to 3.5 ohms CT $2.50
10,000 ohms to 3.5 ohms CT $2.50

CRYSTAL MICROPHONES

Price only $5.50

Stand to suit $2.50 extra.

Packing and Postage 25c.

Model BM3 (illustrated): Response 100-8,000 cycles, fitted with 6 ft. cable and phone plug with on-off switch. Can be used on stand or for hand use.

BM3 Insert, $1.00 each

HAM

RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286 All Mail to be addressed to above address

We sell and recommend Leader Test Equipment, Pioneer Stereo Equipment and Speakers, Hitachi Radio Valves and Transistor Radios, Kew Brand Meters, A. & R. Transformers and Transistor Power Supplies, Ducon Condensers, Welwyn Resistors, etc.

"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

MARCH 1968
Vol. 36, No. 3

Editor:
K. E. PINCOTT VK3AFJ

Assistant Editor:
E. C. Manifold VK3EM

Publications Committee:
G. W. Baty (Secretary) VK3AOM
A. W. Chandler (Circulation) VK3LC
K. M. Cocking VK3ZFQ
Ken Gillespie VK3GK
W. E. J. Roper VK3ARZ

Draughtsmen:—
Clem Allan VK3ZIV
Ian Smith .... 36 Green St., Noble Park

Advertising Enquiries:
C/o. P.O. Box 36, East Melbourne, Vic., 3002.
or
Mrs. BELLAIRS, Phone 41-3535, 478 Victoria Parade, East Melbourne, Vic., 3002. Hours: 10 a.m. to 3 p.m. only.

Advertising copy should be forwarded direct to the printers by **first of each month.**

Publishers:
VICTORIAN DIVISION W.I.A.
Reg. Office: 478 Victoria Parade, East Melbourne, Vic., 3002.

Printers:
"RICHMOND CHRONICLE," Phone 42-2419.
Shakespeare Street, Richmond, Vic., 3121.

★

All matters pertaining to "A.R.," other than subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 36,
EAST MELBOURNE, VIC., 3002.

Acknowledgments will be sent following the Committee meeting on the second Monday of each month. All Sub-Editors should forward their articles to reach "A.R." **before the 5th of each month.** Any item received after the Committee meeting will be held over until the next month. Publication of any item is dependent upon space availability, but in general about two months may elapse before a technical article is published after consideration by the Publications Committee.

★

Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary and not to "A.R." direct. Non-members of the W.I.A. should write to the Victorian Division, C/o. P.O. Box 36, East Melbourne. Two months' notice is required before a change of mailing address can be effected. Readers should note that any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence; in addition, "A.R." should also be notified. A convenient form is provided in the "Call Book".

★

Direct subscription rate is $3.60 a year, post paid, in advance. Issued monthly on first of the month. February edition excepted.

CONTENTS

Page

Technical Articles:—

A Simple Low Cost High Voltage Supply 9
Australis Oscar "A"—Users' Guide, Part Two 10
"Das Softenboomer 160": A Low Cost Rig for 160 Metres 5
Technical Correspondence: Transistor Overtone Crystal Osc. 15
The Unijunction Transistor 2
Using the MR3 Carphone on A.C. 14

General:—

Citizens Band 11
Correspondence 20
Keen DX'er—Jiri Kral, OK2RZ 16
Mail Train Incident 13
New Call Signs 16
Obituary 22
Predictions Charts for March 1968 16
The "XL" Operator Club 20

Contests:—

Contest Calendar 20
1967 A.R.R.L. International DX Test, Australasian Results 20
1967 "CQ" S.S.B. Contest, Oceania Results 20

Notes:—

DX 19
Federal and Divisional Monthly News Reports 21
SWL 17
YRS 15

W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES

VK2WI, Sundays, at 1100 hrs. E.A.S.T.
3595 Kc. a.m. 145.130 Mc. a.m.
7146 Kc. a.m. 146.000 Mc. f.m.
53.866 Mc. a.m. (53.950 Mc. f.m. proposed shortly)

VICTORIA

VK3WI, Sundays, at 1030 hrs E.A.S.T.
1825 Kc. a.m. 144.500 Mc. a.m.
3600 Kc. s.s.b. 145.854 Mc. f.m.
7146 Kc. a.m. 432.500 Mc. a.m.
53.032 Mc. a.m.

QUEENSLAND

VK4WI, Sundays, at 0900 hrs. E.A.S.T.
3580 Kc. 53.995 Mc.
7146 Kc. 144.36 Mc.
14.342 Mc.

SOUTH AUSTRALIA

VK5WI, Sundays, at 0900 hrs. C.A.S.T.
3.5, 14, 52 and 144 Mc. bands.

WESTERN AUSTRALIA

VK6WI, Sundays,

TASMANIA

VK7WI, Sundays, at 1000 hrs. E.A.S.T.
3672 Kc., and re-transmitted by representative stations on—
7146 Kc. 144.1 Mc.
53.032 Mc. 432.6 Mc.

THE UNIJUNCTION TRANSISTOR

ROGER L. HARRISON, VK3ZRY*

PERHAPS you have seen this rather unusual name in overseas (and some local) technical journals. Perhaps you have seen an odd-looking symbol (see Fig. 1) in a circuit in the very same technical journals. Perhaps you have wondered what this little device does—with its symbol that vaguely resembles that of a conventional transistor—but behaves much differently. The thing looks (and behaves?) like some weird paradox — it has an emitter in the wrong place and **two** (yes two!) bases—which, incidentally, gives us its other name—**the double base diode** — which tends to confuse matters even further.

Well, what is this little device and what can you do with it?

The unijunction transistor (hereinafter referred to as U.J.T.) is a semiconductor device possessing quite unusual electrical characteristics. Its construction and operation is markedly different to the conventional two-junction transistor.

CHARACTERISTICS

Fig. 1 shows its symbol and the conventions for current flow in the device. Fig. 2 shows a simplified equivalent circuit. Now, referring to Fig. 2, R_{B2} and R_{B1} represents the resistance between B2 and B1. This is known as the interbase resistance, R_{BB}, and is generally in the range 4K to 12K ohms. This is the resistance of a bar of N-type silicon with two contacts at either end. Now another contact of P-type material is placed somewhere between B2 and B1 on the N-type silicon bar and this forms a rectifying or diode contact called the emitter (E).

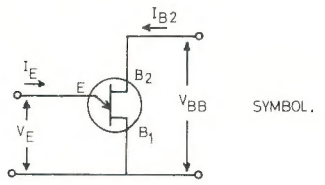


FIG.1.

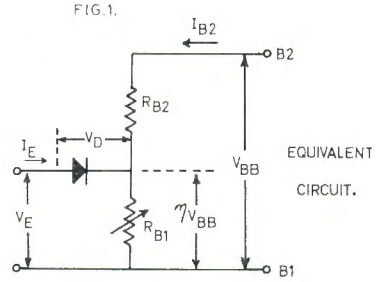


FIG. 2.

INTRINSIC STANDOFF RATIO

If a variable potential is connected between B2 and B1 with the positive on B2 and negative on B1 (E not connected) the device acts just like a voltage divider and a certain fraction, η, will appear at the emitter (E). This fraction (η) is called "the **intrinsic standoff ratio**". The ratio is approximately 0.5 to 0.8 for all types of U.J.Ts. Mathematically, the following equation will accurately define η.

$$\eta = \frac{R_{B1}}{R_{B1} + R_{B2}}$$

PEAK POINT EMITTER VOLTAGE

If the emitter voltage, V_E, is less than ηV_{BB} the emitter diode is reverse biased and only a small leakage current will flow. As V_E is raised towards ηV_{BB} and just above, emitter current will flow as the emitter diode becomes forward biased. The result is that R_{B1} will suddenly decrease its resistance. Consequently I_E will suddenly increase and V_E will drop.

The point at which R_{B1} suddenly decreases is called the "**peak point**" and the emitter voltage at this point is called the "**peak point emitter voltage**" and is labelled V_P.

The diagram in Fig. 3 illustrates the peak point and V_P a little more clearly. These are the static emitter characteristics and you will note that V_P is dependent on V_{BB} (the interbase voltage). The lower curve ($I_{B2} = 0$) is the emitter to B1 diode curve when B2 is disconnected.

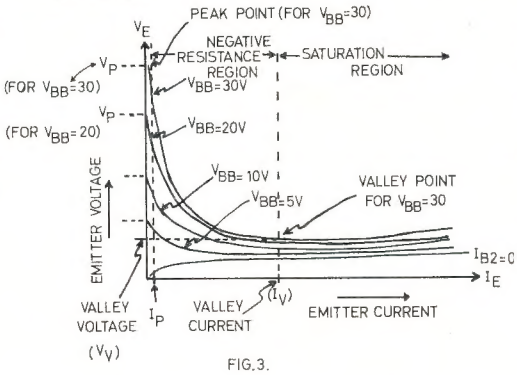


FIG.3.

These curves can be plotted for any U.J.T. by breadboarding the circuit in Fig. 4. Set V_{BB} to convenient voltages in 5v. or 10v. steps, and for each setting of V_{BB} vary the emitter pot. to find V_P first (sudden increase in I_E) and then vary I_E in suitable steps (about 1 or 2 mA. steps), reading V_E at each step. You can then plot the static interbase characteristics like that in Fig. 3. Disconnecting B2 will allow you to plot the curve for $I_{B2} = 0$.

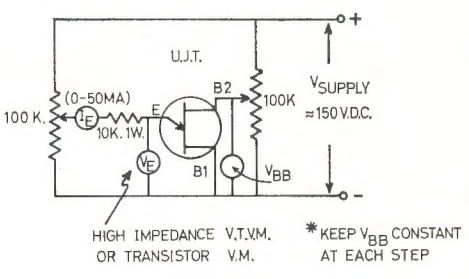


FIG.4.

From these curves an approximation to η can be calculated very easily. Simply divide V_P (for a certain value of V_{BB}) for that curve. For example, take the topmost curve—

Now $V_{BB} = 30$v., let's say $V_P = 16$ volts, at this point $\eta = V_P \div V_{BB} = 16 \div 30 = 0.534$.

To be more accurate at lower values of V_{BB}, use the equation—

$$\eta = \frac{V_P - V_D}{V_{BB}}$$

where V_D = emitter diode voltage,
= 0.6 volts.

PEAK POINT CURRENT

This is marked as I_P in Fig. 3. I_P is the minimum current necessary to trigger the U.J.T. It can be measured using Fig. 4 with some changes. Disconnect the meter (v.t.v.m., etc.) reading V_E. Replace the meter reading I_E (0-50 mA.) with a 0-50 uA. meter. At each setting of V_{BB}, slowly increase the emitter potentiometer until the meter jumps suddenly. The point just before the jump in emitter current is the value of I_P.

VALLEY VOLTAGE

This is marked as V_V on Fig. 3. It is the emitter voltage at the valley point. V_V increases with increase in V_{BB} you may notice.

VALLEY CURRENT

This is marked as I_V on Fig. 3. It is the value of emitter current at the valley point, this also increases with increase in V_{BB}.

STATIC INTERBASE CHARACTERISTICS

These characteristics are a series of curves that relate V_{BB} and I_{B2}. They can be plotted by breadboarding the circuit in Fig. 5. With the emitter disconnected at first, a reading of I_{B2} for every step in V_{BB} is taken. The steps in V_{BB} should be at 5v. intervals. Then, connecting the emitter, increase the emitter pot. until the U.J.T. fires and set I_E at 5 mA. or 10 mA. and, keeping this constant, take readings of I_{B2} at every step in V_{BB}.

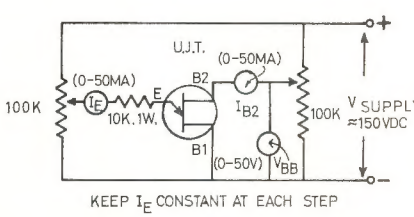


FIG.5.

Take another set of readings for I_E at say 10 or 15 mA. Continue this for steps of I_E at 5 or 10 mA. intervals, stopping at $I_E = 50$ mA. or so. Plotting the results will give a set of curves like those in Fig. 6.

* 1 Mary Street, North Balwyn, Vic., 3104.

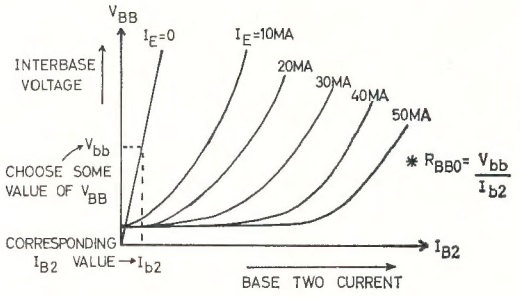


FIG.6.

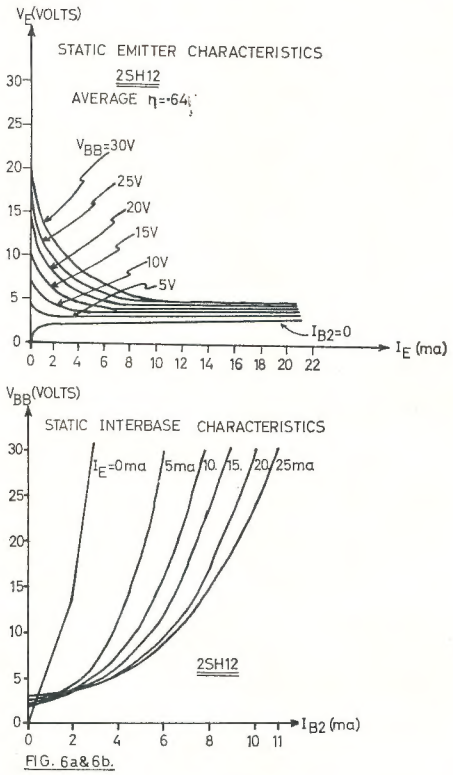


FIG. 6a&6b.

A set of curves (Figs. 6a and 6b) was plotted, using the above methods, for a type 2SH12 U.J.T.

CONSTRUCTION

The U.J.T. is constructed in two basic forms known as the bar and cube structures. Most U.J.T. types are of the bar construction form.

The bar construction is shown in Fig. 7. A small bar of silicon has two ohmic contacts (not junctions) unplanted at opposite ends of the bar. A junction (the emitter) is implanted on the opposite side of the bar between B1 and B2. This junction is somewhat closer to B1 than B2. The unit is generally mounted on a ceramic disc inside

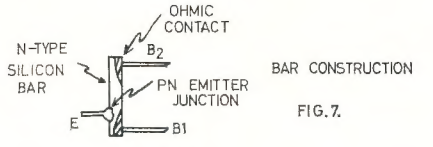


FIG.7.

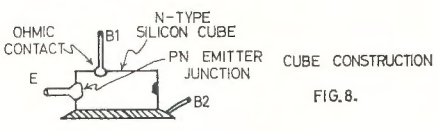


FIG.8.

a TO-5 or TO-18 case and all leads are electrically isolated from the case.

The cube construction is shown in Fig. 8. The cube of N-type silicon is mounted on its base-two contact and the base-one contact is a thin wire alloyed into the top of the cube. The emitter is alloyed into the side of the cube and a PN junction formed. This type of construction is usually mounted in a TO-18 package.

This type of construction gives different characteristics to the bar type. Owing to the small contact area and shape of B1 a higher intrinsic standoff ratio (η) can be achieved with much smaller spacing between E and B1. This produces a lower I_P, short turn-on time, lower valley voltage, and permits operation at reduced voltages. Unfortunately cost is generally higher. Fig. 9(a) and 9(b) illustrates the different static emitter characteristics of typical bar and cube structure U.J.Ts.

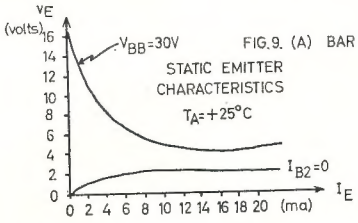


FIG.9. (A) BAR STRUCTURE

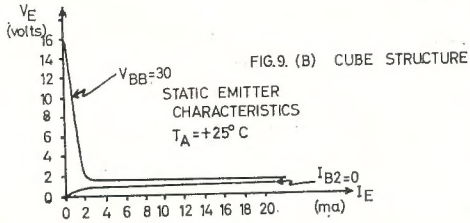


FIG.9. (B) CUBE STRUCTURE

U.J.T. CIRCUITS

Seeing as most types of available U.J.Ts. are of the bar construction type, I will only consider these in the following discussion.

BIAS CIRCUITS

The various parameters and characteristics of a U.J.T. are subject to temperature variation; some more so than others. Now V_P will vary with temperature and is principally due to variation in V_D (see Fig. 2). This effect is usually compensated for by a resistor (R2) in Fig. 10. As the temperature increases, so will R_{BB}; V_{BB} will increase owing to the voltage divider action of R2, R_{BB} and R1.

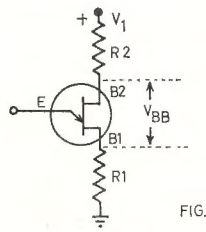


FIG. 10.

The resistor R2 can be chosen from the following equation:—

$$R2 \approx \frac{R_{BBO}}{2\ \eta\ V1}$$

(for R_{BBO} see Fig. 6)

This equation is only approximate and some juggling of R2 might improve the compensation, but generally it will be close enough for a wide range of U.J.Ts. Also, for the circuit in Fig. 10, V_P is given by: $V_P = \eta\ V1$.

The resistor R1 should generally be kept below 100 ohms as it controls the valley voltage (V_V) and valley current (I_V) (see Fig. 3). Use what you have on hand (33 ohms or 47 ohms usually work okay).

RELAXATION OSCILLATORS

The relaxation oscillator shown in Fig. 11 can be used for many applications. For example, tone oscillator, timing circuit, pulse generator, sawtooth generator or a trigger circuit.

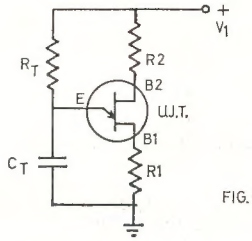


FIG.11.

When V1 is applied C_T appears as a short circuit and thus E is reverse biased and does not conduct. As C_T charges through R_T the emitter voltage rises exponentially towards V1. When the voltage reaches V_P the emitter suddenly conducts and C_T discharges through E and B1 via R1. The emitter then ceases conducting and the whole process begins again. The waveform produced is shown in Fig. 12.

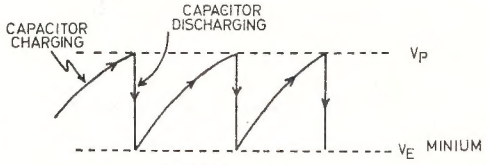


FIG. 12.

The approximate frequency of oscillation is given by:—

$$f\ (c.p.s.) \approx \frac{1}{R_T\ C_T\ L_N \left(\frac{1}{1\ -\ \eta}\right)}$$

The equation holds providing R1 and R2 are small, i.e. R1 < 100 ohms, and R2 from previous equation but less than 1,000 ohms.

To save calculation in many instances a nomagraph (Fig. 13) will assist in the design of a relaxation oscillator using a U.J.T.

Two frequency scales have been given. One for a value of η = 0.55 and another for a value of η = 0.65. Use the scale appropriate to the value of η for the U.J.T. you are going to use. An example for a practical circuit is given later.

A WIDE RANGE RELAXATION OSCILLATOR

The circuit in Fig. 14(a) shows a practical circuit built and tested by the author. I used a Japanese U.J.T., the NEC-2SH12. It performed very well,

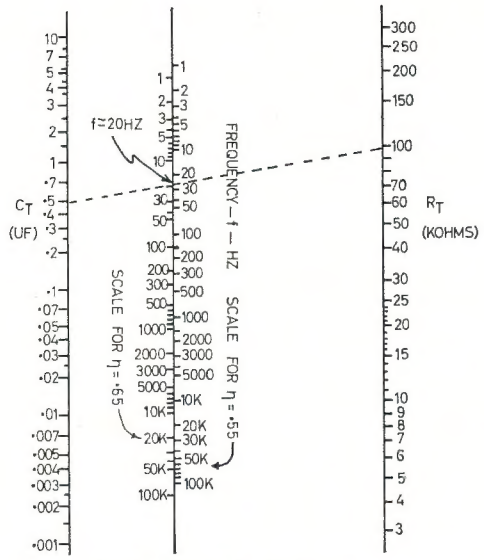


FIG.13. FREQUENCY NOMOGRAPH

the frequency range being 500 to 1. I inspected the waveforms with a Hewlitt-Packard c.r.o. and the results are shown in Fig. 14(b) and 14(c). The circuit would not oscillate below 1 Kc. as the timing resistance R_T was too great to allow the emitter to "fire". The frequency is easily lowered by increasing C_T.

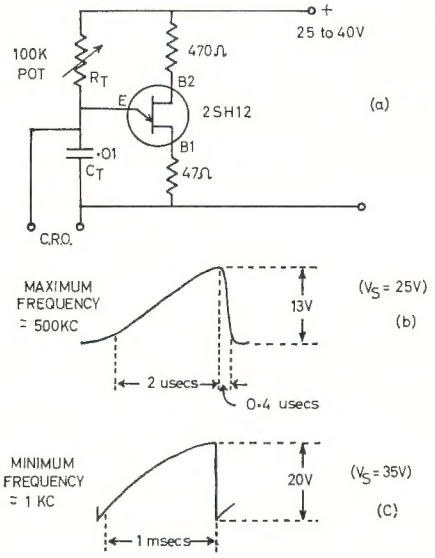


FIG.14.

This circuit has a great potential for the sweep generator in a c.r.o., r.f. sweep generator or panaromascope. Unfortunately the output has a non-linear rise as can be seen in Fig. 14(b) and (c). This can be overcome in two ways. Fig. 15(a) shows R_T returned to a higher voltage supply. This is okay and gives reasonable linearity providing a higher voltage supply is available. It suffers from a disadvantage though —the frequency is not as stable as it would be with a single supply.

In Fig. 15(b) a transistor, connected in a common base circuit, uses the high output impedance of the circuit to maintain a relatively constant charging current for the timing capacitor C_T.

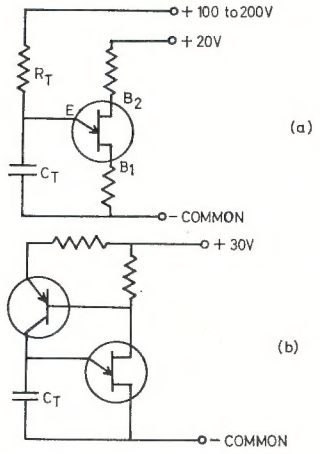


FIG. 15.

PULSE GENERATORS

A current pulse will flow in the emitter, base-one, and base-two circuits each time the emitter conducts in a relaxation oscillator. Thus, a relaxation oscillator can be used as a very efficient pulse generator giving either positive or negative output pulses at various impedance levels. Several circuit configurations are shown in Figs. 16(a), (b) and (c).

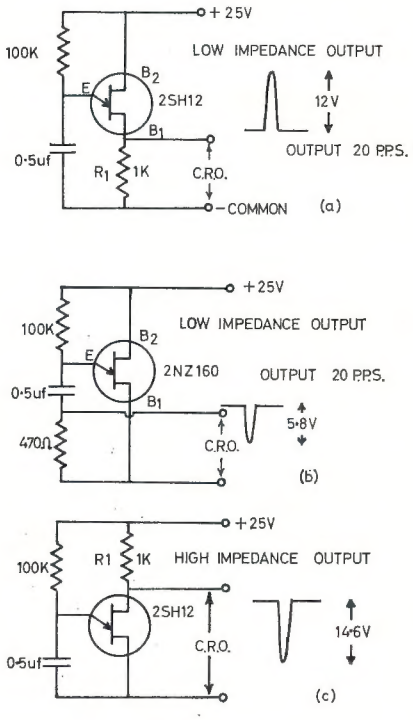


FIG. 16.

* SEE FIG 13 TO OBTAIN VALUES OF R_T AND C_T IN ABOVE CIRCUITS

The output pulse from these circuits has a relatively fast rise time and quite a slow fall time compared with the length of the pulse. A significant improvement in this state of affairs can be made by using an inductance in the B1 circuit. A transistor can be used to invert the output pulse (see Fig. 17).

The approximate inductance can be found from $L = 0.4t^2 \div C_T$, where C_T is the desired pulse width. The answer will be in Henries.

A pulse generator can be designed by using the nomograph of Fig. 13 and picking the circuit configuration you desire from Fig. 16.

The resistor R1 shown in the circuits (a), (b) and (c) of Fig. 16 can be chosen by the "um-now-let-me-see-what-have-I-got" method. Juggle its value and the supply voltage to obtain the output voltage you want.

For more critical applications the circuit in Fig. 17 can be used. The width of the pulse is determined by the inductance in the emitter (L). The frequency of the pulses (or number of pulses per second) is determined by R_T and C_T. The rise and fall times will be quite short, typically one-twentieth to one-fiftieth of the pulse width "t".

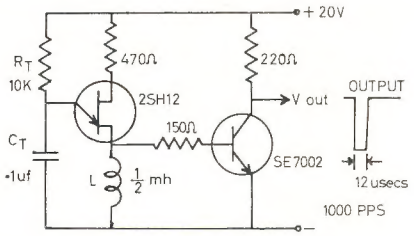


FIG. 17.

U.J.T. TIMERS

A timer can be designed using the relaxation oscillator principle. Referring to Fig. 18, when S1 is closed, C_T charges to the peak point voltage at which time the U.J.T. "fires" and the capacitor C_T discharges through the relay which promptly closes. One set of (changeover) contacts holds the relay closed and removes the supply from the U.J.T. Opening S1 returns the circuit to its original condition. This circuit is useful for periods up to 15 or 20 seconds.

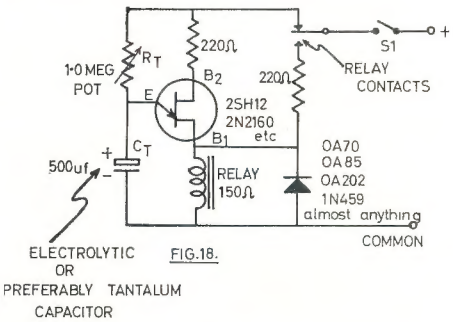


FIG.18.

The best way to design a circuit like this is to haywire it together and juggle R_T and C_T until you achieve the desired result.

I found this method reasonably fast and calibrating the pot. is quite easy. Note that the relay should be physically small so that it has low operating power. A huge 600 or 3000 type relay just won't work (I tried).

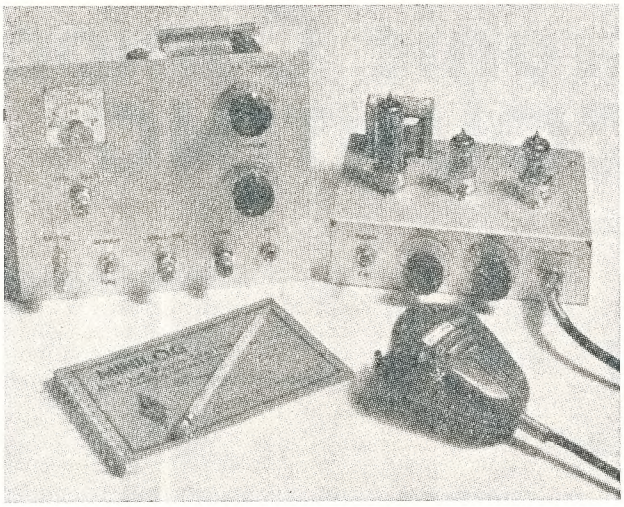
Have a look in the G.E. Transistor Manual for more timer circuits.

(Continued on Page 15)

"Das Softenboomer 160"*

A LOW COST RIG FOR 160 METRES

DOUG DE MAW, W1CER



● Here's a straightforward 160 metre transmitter that will make possible many hours of enjoyable hamming, at moderate cost, on the "top band". Why not make that long-promised debut on 160 now?

IF you haven't tried 160, you've missed an interesting facet of Ham Radio. Since high power operation is not permitted on 160, the little rig described here will hold its own while competing with like-power stations across the country.

[In Australia, 150 watts input to the final is permitted on 160 metres. Also the Amateur Service is the secondary service in this band of 1800-1860 Kc. —Ed. "A.R."]

The 160 metre band offers the DX man who likes to do things the hard way a proving-ground for his operating skill and perseverance. Ground wave coverage on 160 is excellent, making it a useful band for ragchewing and mobile work. Signals in the 1.8 to 2.0 Mc. region are not seriously affected by land masses, such as hills and mountains. A few watts of power will do a creditable job of spanning the continent, provided an effective antenna system is used. All of these features contribute to making the band interesting and useful.

"Das Softenboomer 160" will run 50 watts on c.w. and 30 watts on a.m. In areas where higher power levels are permitted it can be used to excite a linear amplifier.

The power supply can be made from salvaged components taken from a junked t.v. set, making the overall cost of the transmitter a bit more attractive than it would be if new parts were used. Since the balance of the components are readily available from most supply houses, procurement should be no problem to anyone wishing to build the little rig.

THE R.F. CIRCUIT

Two tubes are used in the r.f. section of the transmitter. A 6CL6 serves as the crystal-controlled oscillator and the p.a. stage uses a 6HF5 t.v. sweep tube. The 6HF5 was chosen because of its high plate dissipation rating, high perveance, and low screen voltage requirement. These features make it ideal for operation at low plate voltage where moderate power output is desired.

Constant-carrier screen grid modulation is used for a.m. operation.[1] Because the 6HF5 screen grid operates at low voltage, 100% modulation requires but little audio power from the modulator. For a.m. operation the unmodulated screen voltage is about 75 volts. When operating c.w., 150 volts is supplied to the 6HF5 screen circuit.

Output from the oscillator, Fig. 1, is varied by the drive control, R1. An r.f. choke, RFC2, is used in the plate circuit of the 6CL6. The p.a. grid circuit hookup, C1L1, makes possible the inclusion of C2, the neutralising capacitor. Although the transmitter did not show any outward signs of instability without neutralisation, considerable r.f. feedthrough was apparent in the p.a. stage when the plate and screen voltages were removed with drive applied. This problem was resolved by the addition of the neutralising network, C2, RFC3, and the 0.001 uF. capacitor, at the junction of L1 and RFC3.

The output tank, C3/L2/C5, is a pi network designed to work into a 50 ohm load. There is sufficient flexibility in its tuning range to permit it to match nonreactive loads between 30 and 75 ohms. If other impedances are to be dealt with, a transmatch should be used between J1 and the load.

Both stages of the transmitter are keyed for c.w. A 2 uF. capacitor is used between the keying bus and ground to provide a shaped keying characteristic. The c.w. note is clean and chirp-free when active crystals are used at Y1.

Grid and plate current metering of the amplifier is made possible by meas-

1 Amplitude Modulation Methods, The Radio Amateur's Handbook, chapter 8.

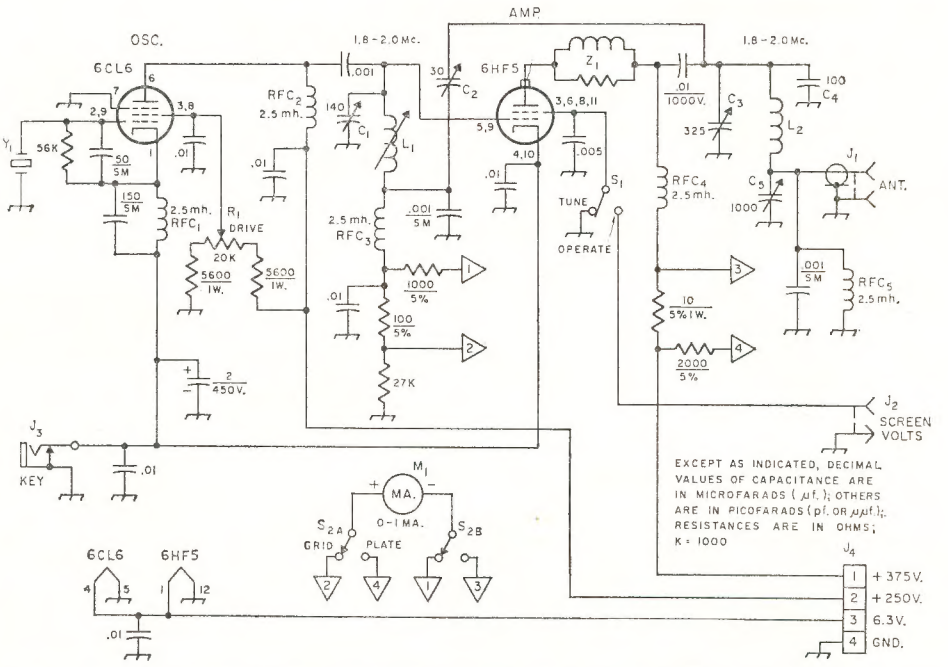
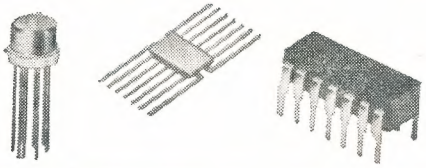


Fig. 1.—Schematic diagram of the r.f. unit. Fixed resistors are ½ watt composition unless otherwise noted. Capacitors are disc ceramic except those marked SM, which are silver mica. Capacitors bearing polarity marking are electrolytic and are in uF.

C1—140 pF. miniature variable.
C2—30 pF. miniature variable.
C3—325 pF. variable.
C4—100 pG. 1,000 volt mica.
C5—Three-section broadcast variable, all sections in parallel. Remove trimmer capacitors from side.
J1—Co-ax. receptacle, type SO-239.
J2—Phono connector.
J3—Closed-circuit phone jack .
J4—Four-pin male chassis connector.
L1—27.5-58.0 uH. variable inductor.
L2—Coil stock, 4 inches long, 1¼ inch diam., 16 turns per inch.
M1—0-1 milliammeter.
R1—20,000 ohm wire-wound control, linear taper, 2 watts.
RFC1 to RFC3 inc.—2.5 mH. 125 mA. choke.
RFC4—2.5 mH. 375 mA. choke.
RFC5—Same as RFC1.
S1—S.p.s.t. toggle switch.
S2—Ceramic rotary, 1 section, 2 poles, 2 positions, non-shorting.
Y1—1.8 Mc. crystal.
Z1—Parasitic suppressor. 7 turns No. 20 enamel wire wound on 56 ohm 1 watt resistor (coil soldered to resistor pigtails).

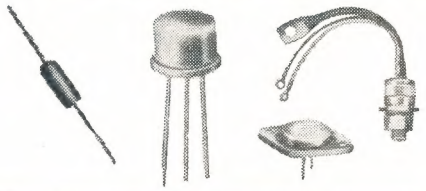
* Reprinted from "QST," August 1966.

Mullard Electronic Components for COUNTING



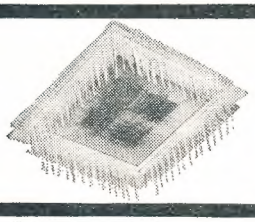
INTEGRATED CIRCUITS

Medium speed DTLs, for industrial and military applications. High speed TTLs and ultra fast E^2CLs for computer applications. Compatible, versatile linears for low level amplifiers, operational amplifiers for telecommunications, instrumentation and control.



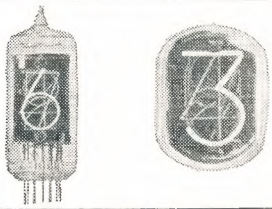
TRANSISTORS, DIODES, RECTIFIERS, THYRISTORS

Silicon planar, alloy, germanium alloy and alloy diffused transistors for general purpose, switching, low noise, low and high power applications. Silicon and germanium general purpose diodes, silicon zener diodes and power rectifiers. Thyristors for all industrial control applications.



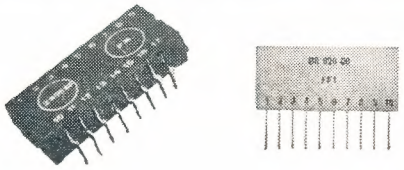
MEMORY PLANES, STACKS, CORES

Single plane matrices for low cost data storage. Lithium nickel ferrite cores permit operation over a wide temperature range. Available in various configurations for most applications. Complete range of miniature matrix stacks up to a capacity of 16,384 50—bit words.



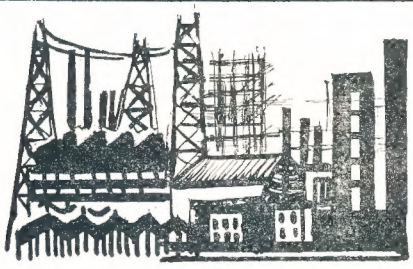
DECADE COUNTER & NUMERICAL INDICATOR TUBES

A wide range of devices is available to suit most applications. Special quality characteristics ensure reliability and long life. Most indicator tubes can be obtained with a tinted filter for use under unfavourable ambient light conditions.



NORBIT 2, CIRCUIT BLOCKS

Mullard Norbit 2 includes sub-assemblies capable of solving industrial control problems using well established solid state techniques. Silicon semiconductors are used throughout so that an operating temperature range of from —10° C to 85° C is guaranteed, with speeds of up to 10 Kc/s. Each circuit block is a ready-made electronic sub-assembly designed to perform one of the basic functions in digital equipment. The range of circuit blocks includes pulse shapers, gate circuits, flip-flops, amplifiers, etc., to meet the requirements of digital systems engineers.



APPLICATIONS ENGINEERING SERVICE

This service operates in co-operation with, and at specific request of, commercial concerns requiring engineering assistance in the application of Mullard products. In addition, answers to technical enquiries are provided by the Technical Service Dept., where world-wide valve and semiconductor references are on file.

Mullard

Mullard-Australia Pty. Ltd.

35-43 CLARENCE STREET, SYDNEY, N.S.W. 2001. PHONE: 29 2006
123 VICTORIA PARADE, COLLINGWOOD, VIC. 3066. PHONE: 41 6644
Associated with MULLARD LIMITED, LONDON

Mullard

M210

uring the voltage drops across a 100 ohm resistor in the grid circuit and a 10 ohm resistor in the plate supply line. A 1 mA. meter is used for this purpose, and is switched for grid and plate monitoring by a d.p.d.t. switch, S2. Reasonable accuracy is assured by the use of 5% resistors. Greater accuracy, at higher cost, would result from the use of 1% resistors.

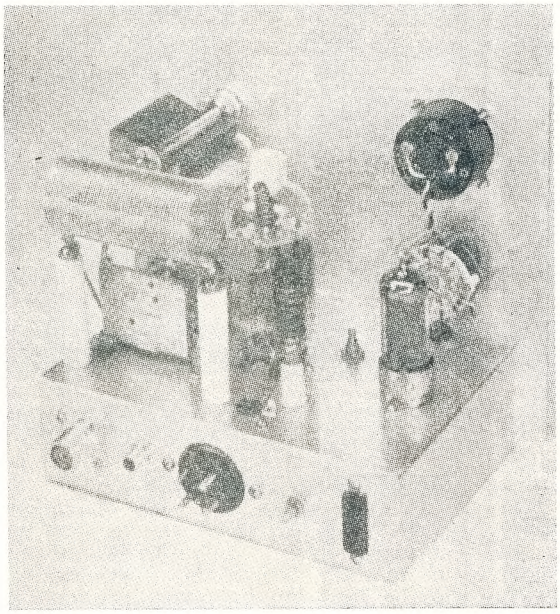


Fig. 2.—Top-rear view of the r.f. assembly. Antenna connector is at left on chassis apron and next to the phono connector for screen voltage input. Power receptacle is at centre with ground post to the right. The four-connector socket at the far right is not used and was installed for future experiments with v.f.o. operation.

★

★

MODULATOR CIRCUIT

Three tubes are used in the screen modulator assembly, Fig. 4. The microphone voltage is amplified by V1A, passed on to V1B for further amplification, and then applied to the speech clipper where the positive and negative peaks of the audio signal are clipped by CR1 and CR2. The amount of clipping is determined by the setting of R2. Since CR1 and CR2 are 3.6 volt Zener diodes, clipping will not take place until the peak audio level reaches 3.6 volts. By connecting the diodes back-to-back, both positive and negative peaks are clipped. The clipper is followed by a filter which prevents high frequency audio harmonics from being passed on to the last two stages of the modulator. The harmonics are generated in clipping and would cause the transmitted signal to be broad and distorted were they not filtered out.

Output from the filter goes to R3, which serves as the modulator gain control. A 6C4 is used as a third audio amplifier and is necessary to compensate for the insertion loss through the clipper network. A negative feedback network is used between the plate of the 6C4 and the plate of the 6CM6 modulator tume. The feedback voltage is taken from the junction of two 27,000 ohm resistors which are bridged across one half of the primary winding of T1. The plate load resistor for the 6C4 is returned to this point to permit part of the audio voltage from the primary of T1 to be fed back to the grid of the 6CM6.

Since the modulator is looking into the nonlinear resistance of the p.a. screen circuit, it is necessary for the internal impedance of the modulator to be low, to minimise distortion. The plate resistance of the 6CM6 is lowered through the use of negative feedback, and the end result is a cleaner a.m. signal.

Transformer T1 is a push-pull 5w. output transformer. Connected as shown in Fig. 4, it provides a 1 : 1 impedance ratio between the modulator and the screen grid of the p.a. stage. The voice coil winding is not used. A 30K resistor is connected between T1 and the screen grid of the 6HF5 to drop the screen potential to 75 volts during a.m. operation. A 2 uF. capacitor is in parallel with the resistor to by-pass the audio around the resistor.

During c.w. operation, plate voltage to the speech and modulator tubes is turned off by S3. The second half of the switch connects the screen to a voltage divider across the 250v. supply.

CONSTRUCTION

The r.f. and modulator assemblies are built on 2" x 5" x 7" aluminium chassis bases. Separate chassis were used so either unit could be used independently when experimenting with r.f. units or modulators of different design. There is no reason why the entire transmitter, including the power supply, cannot be built on a single chassis if one-piece construction is desired.

Shielded audio cable is used in the modulator filament circuit to help reduce hum pickup. The same method is used in the r.f. chassis to reduce stray coupling between the stages.

The panel for the r.f. unit was made from a piece of 1/16" aluminium plate, 7" high by 8" wide. Each chassis is enclosed by attaching a 5" x 7" aluminium bottom plate to it after final checkout. The bottom plates are held in place with No. 6 sheet-metal screws. Each plate is equipped with rubber feet to prevent damaging the surface of the operating table.

The power supply, Fig. 6, is of conventional design and the layout can be anything you please.

TUNING UP

After the interconnecting cables between the units have been attached, connect a 50 ohm dummy load or 60 watt light bulb to J1. Place the transmitter panel switch, S1, in the "tune" position. Apply power and, while observing the grid current meter, adjust C1 for peak indication. Next, adjust the drive control, R1, for a reading of 3 mA. (full-scale meter deflection in the grid current position is 10 mA.). The amplifier can now be turned on by

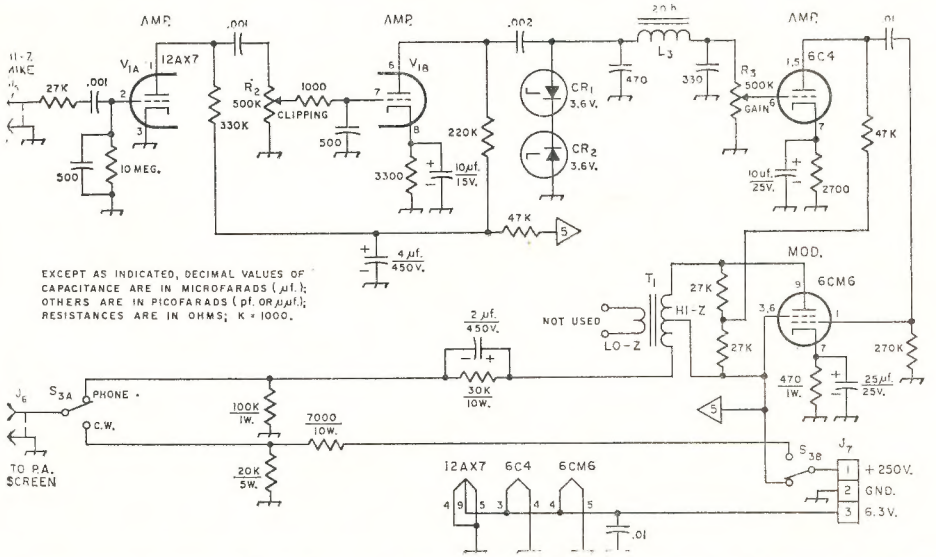


Fig. 4.—Schematic diagram of the modulator. Resistors are ½ watt composition unless otherwise noted. Capacitors are disc ceramic except those bearing polarity marking which are electrolytic.

CR1, CR2—3.6 volt Zener diodes (1N747 or equiv.).
J5—Two-terminal microphone connector.
J6—Phono connector.
J7—Three-terminal connector.
L3—20 H. 15 mA. choke.
R2—0.5 megohm audio-taper control.
R3—0.5 megohm audio-taper control.
S3—D.p.d.t. toggle switch.
T1—10,000 ohm c.t. output transformer, 5 watts; voice coil winding not used.

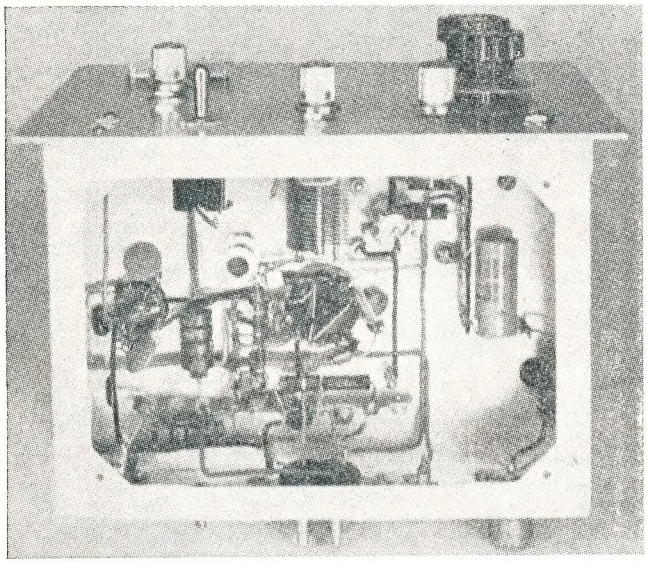


Fig. 3.—Bottom view of the transmitter. Amplifier grid tuning circuit is at the centre with the neutralising capacitor to the right of C1. The oscillator section is at the left of the chassis.

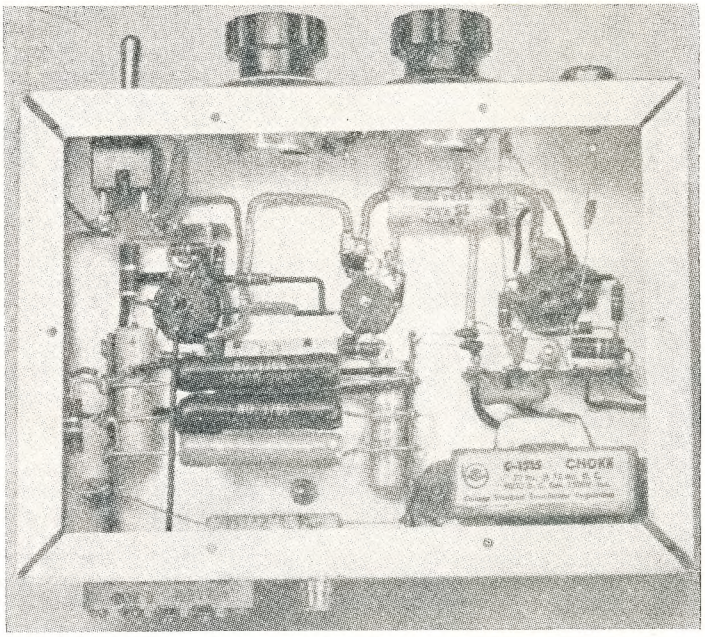


Fig. 5.—Under-chassis view of the modulator assembly. The 12AX7 is at the right, the 6C4 is at the centre, and the 6CM6 is at the left. Shielded wire is used for the filament circuit.

throwing S1 to the "operate" position. With S2 in the plate-current position, quickly tune C3 for a dip in plate current. Normal loaded plate current for a.m. operation will be approximately 100 mA. For c.w. use, the p.a. plate current at maximum output will be about 150 mA. at resonance (full-scale deflection in plate current meter position is 200 mA.).

After tune-up is completed, remove the plate and screen voltage from the 6HF5 by unsoldering the plate supply lead and grounding S1. Connect an oscilloscope or diode r.f. indicator[2] to the antenna end of L2 through a 50 pF. capacitor. With the dummy load still connected to J1, apply drive to the amplifier and adjust the neutralising capacitor, C2, for minimum r.f. signal as seen on the diode detector's indicating meter. An insulated screwdriver will be required for adjustment of C2. The null in output will be quite sharp when the proper setting of C2 is reached.

If an oscilloscope is used, leave it connected to the output of the transmitter, place the modulator switch in the phone position, and operate the transmitter into the dummy load. Make certain that the amplifier is loaded to approximately 100 mA. at resonance. Set the clipping control, R2, at mid-range and advance the gain control, R3, until 100% modulation is observed on the scope. An audio generator can be connected to J5 for this test, or a sustained whistle can be applied to the microphone in lieu of an audio tone. The output waveform should be free from distortion. Tight coupling to the dummy antenna is important if the waveform is to be clean. The Handbook illustrates proper waveforms for a.m. operation in chapter 11.

2 See The Radio Amateur's Handbook, section on amplitude modulation measurements for methods of using an oscilloscope, and section on r.f. measurements for data on diode r.f. indicators.

The amount of clipping used is a matter of choice. Advancing R2 and lowering the level at R3 will increase the clipping. A compromise can be reached while checking out the rig on the air and getting reports from fellow Amateurs. The more clipping that is used, the greater will be the audio punch. The increased talk power will make the audio less pleasant to listen to, but the intelligibility will remain good. If an oscilloscope is not available, the rig can be tuned up for best audio quality by advancing the audio level until a slight flicker is evident in the p.a. plate current. Once this point is reached, back off on the audio gain control until the plate current flickers only on occasional voice peaks. Make certain that the output tank is tightly coupled to the load when operating a.m., to prevent flat-topping on voice peaks.

SOME FINAL THOUGHTS

In areas where the maximum input power is limited to 25 watts, it will be necessary to reduce the screen voltage to the 6HF5 stage so that tight coupling to the load can be maintained during a.m. operation. In such cases as this, the screen voltage can be reduced by increasing the resistance between T1 and the screen. The 30K resistor can be replaced by one of higher value. It is not satisfactory to reduce the input power by loosening the coupling of the pi network to the load, because this procedure would result in a distorted a.m. signal and would cause splatter.

On c.w. it is helpful to detune the p.a. grid tank slightly from resonance. This will lessen oscillator pulling and aid in preventing chirps.

If you're looking for a little rig with a big signal, "Das Softenboomer 160" will fill the bill.

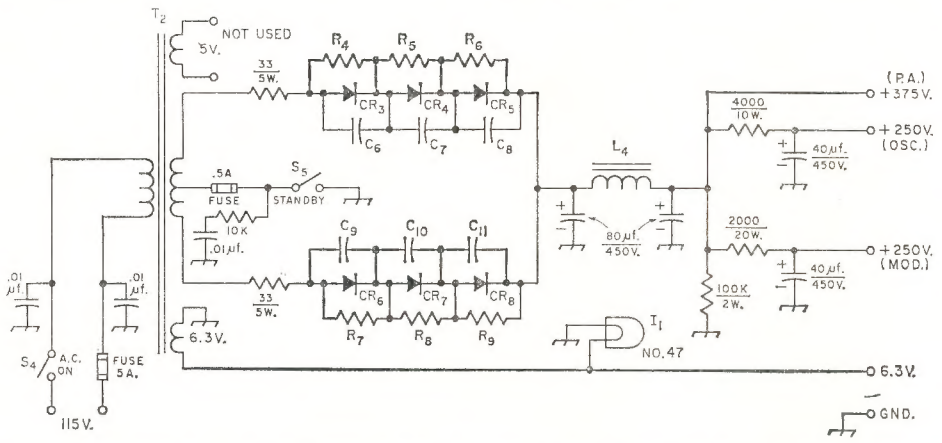


Fig. 6.—Power supply schematic. Capacitors are disc ceramic except those bearing polarity marking, which are electrolytic. Resistors are ½ watt composition unless otherwise indicated. Resistance is in ohms.

C6 to C11 inc.—0.01 uF. 600 volt disc ceramic.
CR3 to CR8 inc.—600 p.i.v. 750 mA. silicon diode.
I1—No. 47 pilot lamp.
L4—Filter choke from t.v. chassis, 2 H., 200 mA.
R4 to R9 inc.—0.47 megohm, ½ watt resistor.
S4, S5—S.p.s.t. toggle switch.
T2—T.v. power transformer, 350 volts at 250 mA., 6.3 volts at 6 amp., 5 volt winding not used.

A SIMPLE LOW COST HIGH VOLTAGE SUPPLY

JIM JONES, VK2ZEZ/T (Ex VK3ZEW)*

MOST Amateurs with a limited budget for Amateur Radio would probably agree that the most costly part of a normal a.m. rig is the power supply.

With the advent of semiconductor diodes it has become much simpler to build high voltage power supplies that are both smaller and more efficient.

They are smaller because, firstly, a power diode (semiconductor) is smaller than its equivalent valve type and they dissipate less heat, therefore they can be placed in a smaller area. On the efficiency side, a diode has only a small internal resistance, therefore it has a low voltage drop across it, approximately 1 volt, but a vacuum tube drops at least 50v. and soft tube (gaseous) at least 15 volts, therefore we are able to get more voltage out for the same a.c. input. Also, there is no power lost in the power supply for rectifier filaments—as there aren't any.

Hence by using modern semiconductor diodes we can cut costs by—

(a) Utilising a transformer with lower a.c. output voltage—for the same d.c. output.
(b) With the production of diodes increasing every day, the cost per unit is becoming cheaper.
(c) No need for 5v. a.c. winding for the rectifier, but in my case this was utilised for another purpose.

GENERAL OUTLINE OF CIRCUIT

I used a replacement t.v. power transformer which had the following secondary windings:

275 v. aside at 275 mA.
5 v. filament at 2 amps.
6.3 v. filament at 8 amps.

In the circuit we could use any t.v. transformer (from one of the older t.v. sets) that used a valve rectifier such as 5AS4, 5U4, etc. The main thing about the transformer is that it must not be of the voltage doubling type, i.e. it must have a centre tap on the secondary high voltage winding. In the circuit we give the voltages which were obtained from our transformer. (Note that the output voltage depends on the d.c. resistance of the choke, so will range from 350 to about 375 volts.)

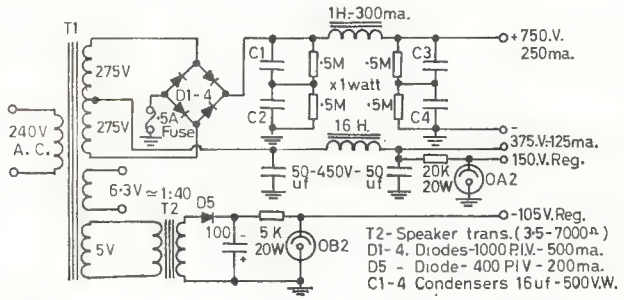
In this circuit basically we have a full wave bridge rectifying circuit coupled into a pi-network. As electrolytics are only made to withstand 600v. maximum, we found it necessary to place two of them in series (with equalising resistors across them) so that each capacitor only had half of the 750 volts across it. It may be necessary to check the equalising resistor with an ohmmeter before placing them in the circuit so that we are sure they are of equal values. The value of choke is not critical but the higher the inductance, the better the filtering. It should be able to pass at least 300 mA. of current.

Plus 350 Section.—Diodes 1 and 4 are used to rectify the a.c. voltage so that we have 350 volts at least, at the centre tap of the transformer. This d.c. voltage is then fed into the pi filter. Again the choke value is not critical although the higher values will give much better filtering. (A large speaker transformer primary could be used as long as it could pass at least 100 mA.)

Plus 150v. Regulated.—This circuit only consists of one 20 watt 20K ohms resistor which has one end connected to 350v. and the other to anode of VR tube. The output is taken across this tube which regulates it.

Minus 105v. Regulated.—As I used this supply in conjunction with a gated screen modulator, I found it necessary to have a negative regulated supply.

After looking through my junk box I found a speaker transformer (7000 ohms to 3.5 ohms) which had a primary to secondary winding ratio of 40 : 1. As I had no other use for the 5v. filament winding, I placed the secondary (3.5 ohms winding) on it and to my joy the output across the secondary was over 200 v. a.c. It was then a simple matter to rectify this voltage, filter it, and then regulate it with a VR tube.



CONCLUSION

This supply can be used for a host of things, anything from supplying the voltages for a 100 watt class B linear amplifier to what I used it for—to supply the voltage for my 6 and 2 metre transceiver.

This supply is mainly used to supply peak currents and that is why it worked extremely well with my rig which incorporates a gated screen modulator. (This circuit only allows the final to draw maximum current on modulation peaks, hence a low average current.)

* 1 White St., Darlington Point, N.S.W., 2706.

DURALUMIN, ALUMINIUM ALLOY TUBING

IDEAL FOR BEAM AERIALS AND T.V.

★ LIGHT ★ STRONG ★ NON-CORROSIVE

STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS—¼" TO 3"

Price List on Request

STOCKISTS OF SHEETS—ALL SIZES AND GAUGES

GUNNERSEN ALLEN METALS PTY. LTD.

SALMON STREET,
PORT MELBOURNE, VIC.
Phone: 64-3351 (10 lines)
Telegrams: "Metals," Melb.

ADELAIDE GAM MELBOURNE

HANSON ROAD,
WINGFIELD, S.A.
Phone: 45-6021 (4 lines)
Telegrams: "Metals," Adel.

AUSTRALIS OSCAR "A"—USERS' GUIDE

PART TWO

Following the February issue of "A.R." in which the Australis Oscar "A" Amateur Radio satellite was described, the following diagrams are given.

The first shows the satellite and the position of the main components including the battery compartment and the electronic modules and also a view of the satellite in its flight configuration.

A block diagram of the main components of the satellite shows details of the transmitters and telemetry system as described last month.

A typical telemetry coding form for reporting the results of an orbit is shown with a typical pass encoded. To clarify the columns, an instruction sheet called "Notes on Using the Australis Oscar "A" Telemetry Coding Form for Telemetary Reporting" is appended.

The telemetry calibration curves follow. It should be noted that the calibration for channels 5 and 7 (internal and skin temperature) is the same. Each curve is approximated by a linear region and the equation for this region is included.

Local co-ordinators have been appointed in each State of Australia to facilitate the distribution and collection of data relating to the project. Any Amateur wishing to track the satellite or with any queries relating to the project should contact his local co-ordinator. Telemetry reporting sets (comprising 3 calibration curves, 2 telemetry coding forms and "Notes") are available from local co-ordinators who will also have all tracking data and other information closer to the flight.

The local co-ordinators for Australia are:—

New South Wales:
A. Swinton, VK2AAK,
P.O. Box 1, Kulnura, N.S.W., 2251.

Victoria:
W. M. Rice, VK3ABP,
54 Maidstone St., Altona, Vic., 3018.

Queensland:
L. Blagborough, VK4ZGL,
54 Bishop St., St. Lucia, Qld., 4067.

South Australia:
B. Tideman, VK5TN,
33 Ningana Ave., Kings Park, S.A., 5034.

Western Australia:
D. Graham, VK6HK,
42 Purdon St., Wembley, W.A., 6019.

Tasmania:
P. Frith, VK7PF,
181 Punchbowl Rd., Launceston, Tas., 7250.

The latest information is that the launch will occur "around the middle of the year" (1968), but is, of course, subject to delays beyond the control of Project Australis.

NOTES ON USING THE AUSTRALIS OSCAR "A" TELEMETRY CODING FORM FOR TELEMETRY REPORTING

1. Please ensure that your local co-ordinator has a copy of your station resume including the following details:
   - Name and postal address.
   - Call sign or station identification.
   - Station latitude and longitude.
   - A brief description of v.h.f. equipment such as antenna, pre-amplifier, converter and receiver.

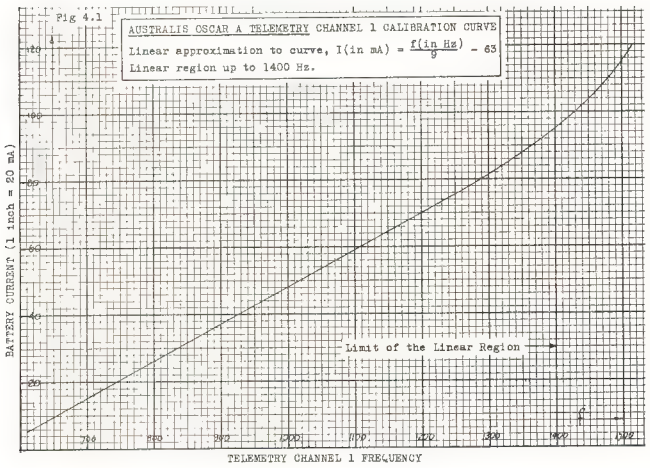
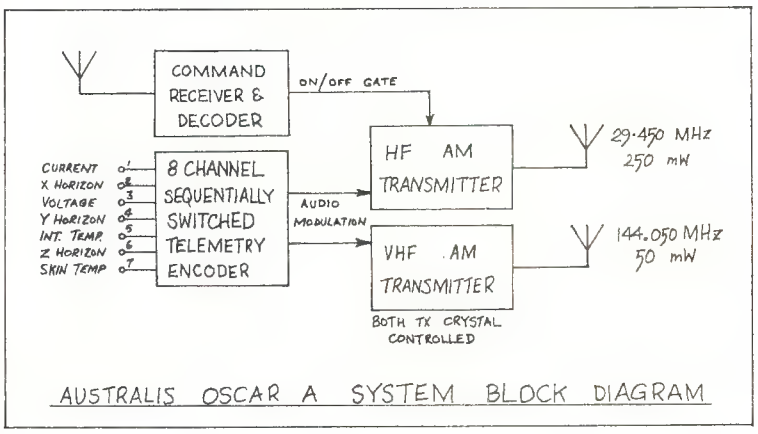


Fig 4.1
AUSTRALIS OSCAR A TELEMETRY CHANNEL 1 CALIBRATION CURVE
Linear approximation to curve, I(in mA) = f(in Hz)/9 - 63
Linear region up to 1400 Hz.
BATTERY CURRENT (1 inch = 20 mA)
Limit of the Linear Region
TELEMETRY CHANNEL 1 FREQUENCY



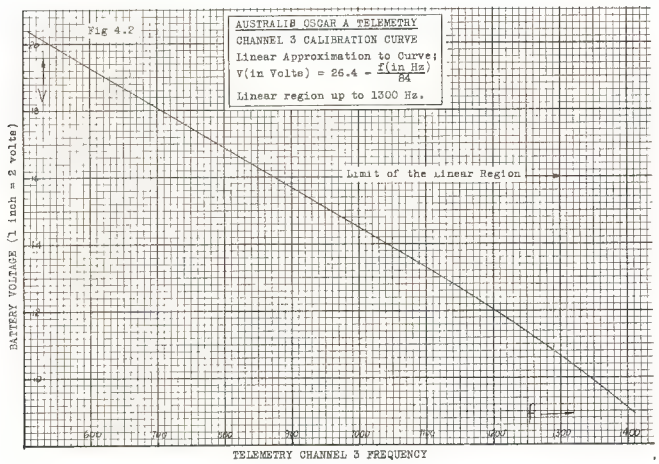


Fig 4.2
AUSTRALIS OSCAR A TELEMETRY
CHANNEL 3 CALIBRATION CURVE
Linear Approximation to Curve;
V(in Volts) = 26.4 - f(in Hz)/84
Linear region up to 1300 Hz.
BATTERY VOLTAGE (1 inch = 2 volts)
Limit of the Linear Region
TELEMETRY CHANNEL 3 FREQUENCY

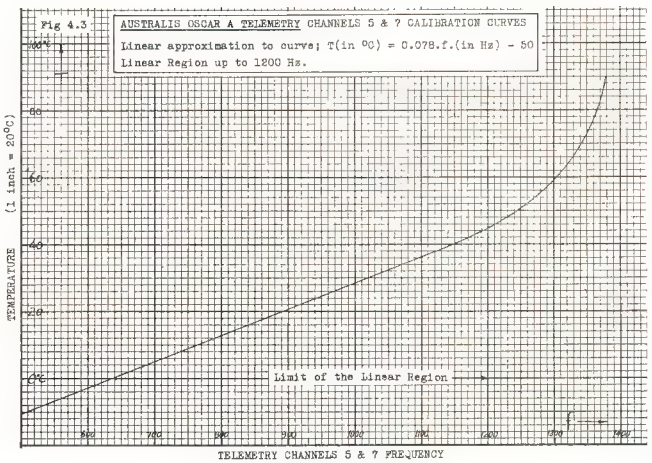


Fig 4.3
AUSTRALIS OSCAR A TELEMETRY CHANNELS 5 & 7 CALIBRATION CURVES
Linear approximation to curve; T(in °C) = 0.078.f.(in Hz) - 50
Linear Region up to 1200 Hz.
TEMPERATURE (1 inch = 20°C)
Limit of the Linear Region
TELEMETRY CHANNELS 5 & 7 FREQUENCY

A brief description of your h.f. equipment.

A brief description of the method used to decode the telemetry.

2. Having decoded the telemetry for a pass, select those results which you think are representative of the pass, rejecting wildly inconsistent results.

3. Write clearly with one character per column and one orbit per line. Any comments may be included in the "Comments" column and on the reverse side.

4. Enter your call into "Call" column (if no call sign, write ZZ1 followed by your initials). Please ensure that a figure is entered into column 3, thus the station A3BCD would enter A into column 2, leaving column 1 blank.

5. "AOS" = Time of acquisition of signal.

"LOS" = Time of loss of signal (to shorten the form, hours of LOS is inferred from AOS time). All times are to be in Greenwich Mean Time (Z or GMT).

6. "R" and "S" columns—readability and strength:

Readability—

1 — Unreadable.
2 — Barely readable.
3 — Readable with difficulty.
4 — Readable.
5 — Perfect readability.

Strength—

1 — Faint signals.
2 — Very weak signals.
3 — Weak signals.
4 — Fair signals.
5 — Fairly good signals.
6 — Good signals.
7 — Moderately strong.
8 — Strong signals.
9 — Extremely strong signals.

7. The telemetry columns:

Channel 0, "Hi," "A" if the HI keyer is operating normally; "F" otherwise, and describe the failure on the back of the form.

Channel 1, "Current," battery current drain in milliamps.

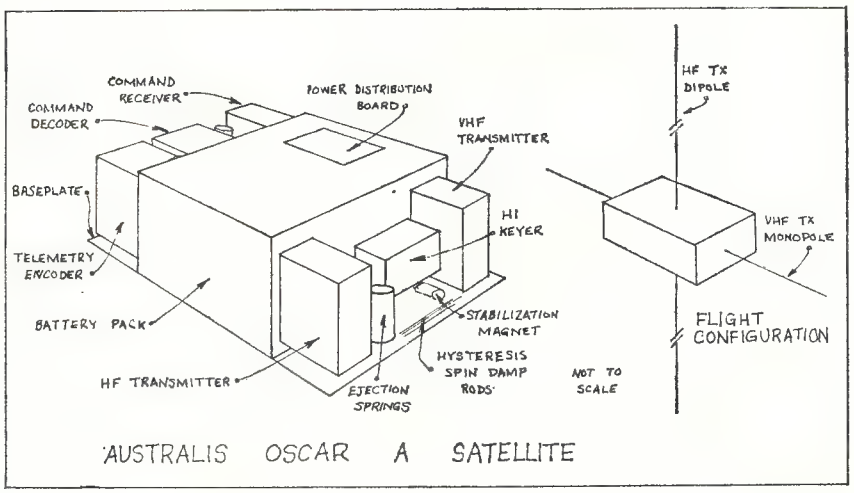
Channel 3, "Voltage," battery voltage in volts.

Channel 5, "Int. Temp.," temperature of the electronics modules in degrees C.

Channel 7, "Skin Temp.," temperature of the satellite's outer skin in degrees C.

Calibration curves are supplied with this form. Reports on the horizon sensors (channels 2, 4 and 6) should be entered in the comments column and should give some idea of the satellite's spin.

8. When completed, the coding form should be returned to your local co-ordinator who will forward them to Project headquarters. Further copies of the coding form can be obtained from him and any enquiries regarding the project should be made to him.



AUSTRALIS OSCAR A SATELLITE

AUSTRALIS OSCAR A TELEMETRY CODING FORM

CALL	ORBIT NUMBER	MONTH	DAY	VHF TRANSMITTER AOS HR	AOS MIN	AOS SEC	LOS MIN	LOS SEC	R	S	HF TRANSMITTER AOS HR	AOS MIN	AOS SEC	LOS MIN	LOS SEC	R	S	TELEMETRY HI	CURRENT	VOLTAGE	INT. TEMP.	SKIN TEMP.	
1 2 3 4 5 6	7 8 9	10 11	12 13	14 15	16 17	18 19	20 21	22 23	24	25	26 27	28 29	30 31	32 33	34 35	36	37	38	39 40	41 42	43 44	45 46	
VK3ATM	005	07	16	12	33	25	45	03	4	7	12	27	45	57	10	5	8	A	65	17	53	23	about 4 rpm.
																							COMMENTS Spin of satellite

A TYPICAL PASS CODED – ALL SYSTEMS OPERATING NORMALLY

CITIZENS BAND

The text of a memorandum issued by the G.P.O. [English] is as follows:

"In agreement with the Board of Trade the Postmaster-General has made an Order under Section 7 of the Wireless Telegraphy Act 1967 'specifying' certain radio apparatus for the purposes of that Section. The Order is due to come into force on 1st April, 1968.

"It means that the authority of the Postmaster-General will be required by anyone who wants to manufacture or import radiotelephone transmitters capable of transmitting on any frequency between 26.1 and 29.7 Mc. or between 88 and 108 Mc.

"For some time past the public have been offered small imported transmitters, e.g. the 27 Mc. walkie-talkies, which operate on the wrong frequencies for this country. The Post Office has warned that use of these sets cannot be licensed here because they are liable to interfere with authorised services and has prosecuted a number of people for using them without a licence. The purpose of the Order is to deal with the matter at source and protect the public from being offered sets which they cannot legally use.

"This does not mean that there will be a complete ban on manufacture or import of all types of apparatus using the frequencies in question. Exemptions will be made for those which can legally be used. Applications and enquiries should be addressed to the G.P.O. Radio and Broadcasting Department, Radio Branch, Armour House, St. Martin's-le-Grand, London, EC1. Some of the frequencies covered by the Order are used by licensed radio amateurs and they will be authorised to build their own apparatus for use within the terms of their licence. This will be done by a general authority published in the London, Edinburgh and Belfast Gazettes.

"The Order effects only two frequency bands and does not disturb the present arrangements for other frequencies. For example, the Post Office has approved some walkie-talkies (which meet its technical conditions and use the correct frequency bands for this country) and will continue to licence their use. It is important to remember that any use of radio in this country requires a licence from the Postmaster-General."

* * *

In accordance with the fourth paragraph of the G.P.O. announcement, an authority will be published which will exempt licensed radio amateurs from the restrictions to be imposed by the Order. Amateurs will therefore continue to be able to construct or purchase transmitting and receiving equipment for use in the band 28.0 to 29.7 Mc. and the Order will assist in preventing encroachment on these frequencies by "citizens band" type operation.

The Society has been consulted by the G.P.O. Radio Branch regarding the terms and effect of the Order and there will be continued liaison in connection with the method of exempting equipment designed for amateur use.

—From R.S.G.B. "Radio Communication," February, 1968.

NEW 1967 EDITIONS!

★ THE RADIO AMATEUR'S HANDBOOK

The standard reference work and text for everyone—Hams, Experimenters, Students, Engineers, Lab. Men, Technicians.

BY A.R.R.L. PRICE $6.10 posted

★ THE RADIO HANDBOOK–17th Edition

Tells how to design, build and operate the latest types of Amateur Transmitters, Receivers, Transceivers and Amplifiers.

BY ORR PRICE $13.45 posted

ALSO AVAILABLE–

★ THE RADIO TRANSISTOR HANDBOOK

This up-to-date Handbook covers a wide range of communication for both Amateur Radio and Commercial Applications.

BY STONER & EARNSHAW PRICE $6.65 posted

McGILL'S AUTHORISED NEWSAGENCY

Established 1860 183-185 ELIZABETH STREET, MELBOURNE, C.1, VIC.

"The G.P.O. is opposite" Phones 60-1475-6-7

BIG THINGS in SMALL TRANSFORMERS

Today, with the emphasis on smaller components our own lamination and heat-treatment section can cater for your special needs for small transformers. Consult us also for all small TRIMAX power or audio transformer requirements. The Transformer above is a typical example of a specially developed low-level TRIMAX unit in a Mu-metal case. Overall size is only 1⅛" diameter by 1¼" deep.

LM Ericsson

L M ERICSSON PTY. LTD.

"TRIMAX" DIVISION

FACTORY: CNR. WILLIAMS RD. & CHARLES ST., NORTH COBURG, VICTORIA. 'PHONE: 35-1203 . . . TELEGRAPHIC ADDRESS: "TRIMAX" MELB.

LM41

MAIL TRAIN INCIDENT

Recently one hot day in sunny Queensland in this great big continent of "Down Under," I was making a trip between two provincial towns about 200 miles apart. Townsville to Mackay.

About to embark by rail, I spied an OT Amateur friend, now QRT.

"Blind my eyes, if it isn't Harry G." I extended a hand. The one he gave me in return was cruelly malformed due to a car smash, which some years earlier had put paid to a proficient c.w. career—and soured him in the process. Harry was a garrulous s.s.b. knocker. Secretly, I felt he wanted to put a signal on the air again, but his overt criticism of "duck talk" had put him out on a limb.

Conditioned reflexes took us to the station bar. Here it was so cool, quiet and easy to talk. I pointed questionably to a large jam jar wrapped in brown paper.

"A genetic infusion for my bees," Harry explained. "At least it's a profitable sideline."

The inference being that Amateur Radio was not. So I took him up on it.

"So's Ham Radio, socially."

"Yeah, strained through 'duck talk'."

"Oh, so you have a receiver?"

"I listen a bit sometimes."

"Good enough," I thought to myself. "I'll have him back on the air if I can."

Our libations at the shrine of Bacchus were cut short by the call "All Aboard." He to his compartment, and I to mine. We'd continue the rag chew at the journey's end.

Imagine my shocked surprise, when at the first stop en route, I saw two uniformed policemen lumbering a struggling and unclad Harry from the train. Harry a little eccentric, maybe, but a "nut", impossible. Making a snap decision, I deapt from the train and made pace for the police station, which was just across the street.

What had happened? Well, if I remind you of the old cliche about truth and fiction, you still won't believe it.

☆

Compartments in up country trains in this part of the world carry six passengers. Three on each side. Harry found he had a whole seat to himself but arrayed in front of him were three stiff, matronly ladies of severe countenance and unbending demeanor. They appraised the OT at the lowest common denominator. Who could blame them. Harry does not exude charm or inspire confidence. The term "rough diamond" fitted well.

Nature in her own manner had provided him with a somewhat lopsided cadaverous countenance. The car smash, a twisted body and his clothes were invariable bought off the hook — and today he hadn't got around to shaving and smelled of drink. Swaying a little, he stowed his portmanteau and surreptitiously slid the jar of bees under the seat. He didn't want the old girls making a fuss and he wasn't sure of the regulations concerning the carrying of livestock in passenger compartments. After some indecision, he discarded his coat.

"Morning," he said affably, hoping to start the trip off by a show of sociability. "Hot day."

No answer.

He'd try once more. "Sure could do with some rain. Believe some's forecast."

"My man, you've been indulging in an alcoholic beverage," said the group's spokeswoman.

"Er—yes, did have a couple for the trip. Nothing cool supplied on these ole puffers yer know."

Noses rose in disdain. Their intolerance turned Harry's susceptibilities a little pink. Besides, his inhibitions were down a somewhat.

"Expect me to go out there on the plain and suck a gibber like the natives," he said a little childishly and testily.

Nothing more was said, so the OT settled himself back and relaxed. The rhythmic of wheels against rail junctions began to fade. Heat and alcohol were turning our Ham's brain into a sophoric void. Thought was impossible, even of his beloved bees. Soon he slept. Even the ladies began to doze. But the livestock remained vitally alive and things were on the move. Rubber bands have a habit of creeping. The one securing the paper lid on the jam jar suddenly flew through the air with a faint but perceptible ping. The hot, angry bees were loose.

☆

Some miles further along the track, Harry was brought back to consciousness. Something or somethings had invaded the leg of his pants. He scratched—and was suddenly stung into life. Without wishing to alarm the ladies opposite, he began to squirm, twist and shake his legs in a vain effort to dislodge the advancing nucleii, who were swarming after their Queen.

Consternation reigned opposite. Was this "odd bod" having a fit?

Finally the pain and strain broke him. "Get out," he bellowed, leaping to his feet and tearing at his belt strap.

With a scream they fled. Harry crashed the compartment door shut behind them and tore off his pants. He threw up the partly open window and in sheer ecstasy of relief reached out as far as he could and shook the vicious beasts free. But this was not to be Harry's day. In fact the fates were dead against him. Over the roar of the wind he failed to hear an approaching train. The engine took the trousers from his grasp as neatly as railmen exchange staffs. For a moment he stood appalled. The remaining few bees were flying to their freedom. His eyes settled on the jam jar with its sprung lid. Overcome by pique and disgust, he hurled it out the carriage window.

The conductor arrived with the lady complainants huddling close behind.

"Now what's going on here?" he demanded, surveying Harry, clad in shirt tails and underwear, and scratching feverishly. "Where's your trousers, man?"

"Back at Townsville by now."

"What! Do you mean you boarded the train like that?"

"No. It's those damned Be——"

Mistaking the noun for a blasphemous adjective, the train guard raised an authorative arm, cutting him short. Then deciding he had a "nut" on his hands, resolved that a show of sympathy might restore the situation. Moving closer he confided. "Yeah man, I know how you feel. Three dames like that, plus the heat is more than any man should suffer on a trip like this. Come along with me and I'll find ya a nice quiet seat all to yourself."

But the small intrigue failed. Harry, smarting in body and spirit was in no mood to acquiesce. Somehow he blamed the women for his predicament. Their apparent senseless feminine timidity irked him.

"No," he roared. I paid for this seat and I'm keeping it. Go to Hell and take those Victorian matriachs with you."

The guard backed out, closed the door and locked it. "Come with me," he said turning to the women. "I'll find you a vacant compartment.

Back in his van, the guard radioed ahead. "Have what looks like a mild case of exhibitionism aboard—or maybe an aggressive psychopath. Can't tell, but ask the Cops to bring a 'jacket' just in case."

Two members of the constabulary were waiting, armed with the necessary equipment, and pre-set in their minds that old Harry was psychotic. No time was wasted in argument. The train was already late, so on with a "straight jacket," rendering him physically docile, he was removed from the train to the weather beaten precinct of a one-pub town.

☆

"Springing" Harry from the prison walls proved to be a tedious job. The Police weren't inclined to believe his story. Finally as the shadows of the day began to lengthen, Harry was allowed to sign a statement and I presented a cheque for his bail.

Free, and with an hour to fill before the next train, we repaired to the only place possible—the pub. If Harry did not need any more liquor, I surely needed a couple of stiffiners.

The OT gazed miserably into his half empty glass. (A little of the dog that bit him earlier.) "Those flatfoots thought it one heluva big joke at the end didn't they," he mused. "I wonder what the judge will say?"

"Oh, I reckon you'll be charged for carrying livestock on a passenger train —and that's not criminal."

"Yeah, but the fine's heavy. Two thousand dollars maximum — and I've lost the best strain of bees in the country." After a long pause, he smiled wanly. "Shoulda stuck to Amateur Radio I guess."

Hobbywise Harry was now destitute. Spiritually in an abyss. Both objects of his affection had been taken from him. First Amateur Radio, now his apiaristic dreams had vanished.

(Continued on Page 15)

USING THE MR3 CARPHONE ON A.C.

W. GEORGE FRANCIS, VK3ZCG*

THIS method is a simple and easy way of operating the Carphone Junior, both from the battery in the car and also straight from the mains via a step-down transformer to the normal battery plug and by removing the vibrator from its socket and inserting a shorting plug in place of it.

The idea originated as a thought amongst some of the boys in the Western Zone, and brought across to Gippsland by Harry VK3ZX when he moved into Traralgon last year. As he required to run his carphone off the mains inside as well as in the car, so with Graham's (VK3QZ) help, the idea was tried out successfully, and since has been used daily by members of the Eastern Zone who have Carphone Juniors.

No excessive overheating has been observed, but the original vibrator transformer does run at high temperature, so it is suggested to run the set out of its case when used in the shack. The step-down transformer voltage output should not be higher than 12.5 volts. If the voltage is higher, excessive heating may take place. It is well to remember that the vibrator transformer was designed for a higher frequency operation of about 120 cycles or more.

A suitable step-down transformer with a 2-pin polarised socket already mounted is the Ferguson transformer type TS12/60A, or out of your junk box a t.v. mains transformer can be used if it has a 12 volt filament winding or two 6 volt windings that can be connected in series.

Try it, if it is satisfactory, mount the t.v. transformer in a ventilated box and wire a 2-pin polarised outlet socket as per sketch, and connect the a.c. input to the transformer highest primary winding tap, so to keep the secondary voltage as close to 12.5 volts as possible. This will enable the carphone battery lead plug to be plugged in to either the d.c. outlet socket mounted in the car or the step-down transformer.

When changing from one supply to the other, it is most important to remember to remove the V6606 vibrator when used on a.c. and replace it by a shorting plug made out of an old 6-pin valve base with the two larger pins (1 and 6) wired with a shorting link soldered across.

When changing back to d.c. operation, it is also most important to refit the vibrator, otherwise the vibrator transformer will burn out.

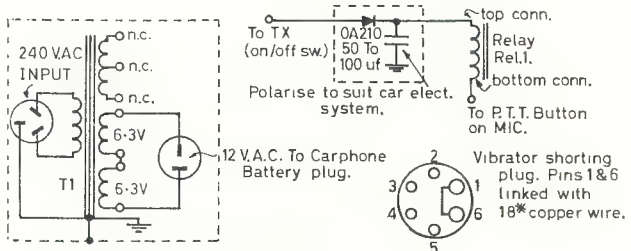
The shorting plug may have a small hole drilled into the side of it and a piece of nylon cord or string attached to it and the protection rail, so it can be always found.

* 31 Donald St., Morwell, Vic., 3840.

So, it is a simple matter to change from a.c. to d.c. or back again, but firstly before you can use the transmitter on a.c. a small permanent modification has to be carried out on the relay supply, that is, by wiring a OA210 or similar rectifier in series with the change-over relay REL1 bobbin, on the bottom lead closest to the chassis and a smoothing electrolytic capacitor of 50 to 100 uF. connected to chassis.

The rectifier and condenser will have to be polarised according to the d.c. system of the car, if it is positive or negative earthed, as per sketch. Which ever way you wire it to suit your car, it will operate on the a.c. supply.

This article should enable the Carphone Junior user to extend his operation considerably, as he can now use it as a low power base station, and keep up with the local net and passing highway visitors (Interstate) with no t.v.i. It is recommended to use a ground plane or a vertical polarised skeleton slot yagi or 8 element phased array cut to 146 Mc.



T.1. T.V. Mains transformer, or Ferguson step down, type T.S.12/60A.

EXCELLENT OPPORTUNITIES

now exist for employment as

COMMUNICATIONS OFFICER

in the

CIVIL AVIATION DEPARTMENT

(Vacancies in all States)

Salary: $98.88 per fortnight. In addition, minimum shift allowances (excluding overtime) average $24 per fortnight.

Qualifications: (i) Under 36 years of age.
(ii) Touch type 30 w.p.m.
(iii) Receive and transmit Morse 15 w.p.m.
(iv) At least two years recent communications experience.

Training: Successful applicants will undertake a departmental standardisation course shortly after commencement of duty. Opportunities exist for further training for advancement as Flight Service Officer.

Benefits: Liberal furlough, recreation and sick leave. Permanent appointment after successful completion of initial training course with associated Superannuation rights.

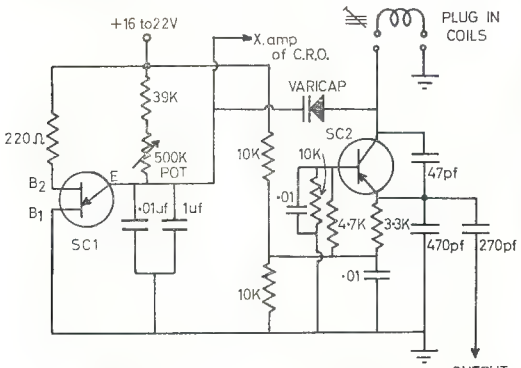
How to Apply: Telephone or write to the Recruitment Officer, Department of Civil Aviation, in your local State Capital City.

UNIJUNCTION TRANSISTOR

(Continued from Page 4)

SWEEP GENERATOR

Fig. 19 gives the circuit of a very handy little sweep generator. The coils can be switched if you like. It will work from about 50 Kc. to about 60 Mc., depending on the transistor used for SC2. If you don't want to go real high in frequency, an OC45N will work admirably.



SC1 2N1671, 2N2160, 2N2646, 2SH12

SC2 OC170, OC171, 2N741, 2N1747, 2N2362

VARICAP 1N955

almost any will work

FIG. 19.

The circuit is fairly non-critical and some variations are permissible. The supply could be two 9v. batteries in series. Coils are found by experiment. For 455 Kc. the coil from an i.f. transformer (with capacitor removed) is ideal. Similarly, i.f. windings at other frequencies work well. To limit the sweep range add a capacitor across the coil and retune the slug. The output is quite high and some attenuation may be necessary. Connect a high resistance in series with the output to effect a reduction.

Well, there we are. Knock up a few circuits and find out about U.J.Ts. I think you may find a few useful circuits in this article. For more ideas and circuits look up the references mentioned below.

REFERENCES

"73 Magazine":
Jan. 1966 (U.J.T. Keyer, p. 12).
Dec. 1966 (1 P.P.S. Generator, p. 23).
March 1967 (Sawtooth Generator, p. 29a).
"Electronic Fundamentals and Applications," J. D. Ryder.
"Transistor Manual," G.E. Company.

TECHNICAL CORRESPONDENCE

Transistor Overtone Xtal Osc.

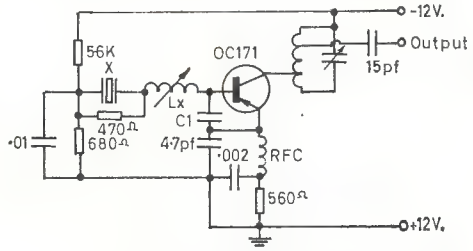
Editor "A.R.," Dear Sir,

I wish to query an article published in "A.R." May 1967 as to a possible circuit error. The article was "Overtone Operation of Quartz Crystals," by D. H. Rankin, VK3QV, and the circuit is Fig. 11—a transistor overtone crystal oscillator.

As I have had very good results with the valve version (Fig. 10 same article), the transistor version was attempted with no success, as this device is an impedance inverter the position of the 680 ohm bias resistor seems to damp the circuit.

I have modified the circuit and it works satisfactorily using crystals of 25, 35.5, and 40 Mc., and various transistors—OC171, 2N3563, BF115. Enclosed is the circuit I have used.

—C. S. Perger, VK7ZCP.



AUTHOR'S REPLY

The point raised by VK7ZCP is a valid one and he is to be thanked for raising the matter. No matter how much checking is carried out some errors seem to slip by somehow.

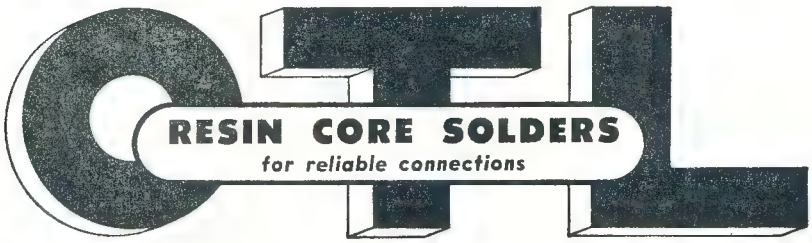
The alternative arrangement suggested is quite satisfactory but has the minor disadvantage that both sides of the crystal are above ground. This makes the switching of the unit a more difficult matter where multiple frequency outputs are required from the oscillator.

Another possibility is to increase the value of the bias resistors but maintaining the ratio of values so that the base voltage remains the same. For example, the 5.6K resistor could be replaced with a 120K and the 680 ohm resistor with a 12K one. This 12K resistor should not damp the series inductance.

—D. H. Rankin, VK3QV.

[Apologies are offered for the delay in this matter as the author has been overseas on business.—Editor.]

CHOOSE THE BEST—IT COSTS NO MORE



O. T. LEMPRIERE & CO. LTD. Head Office: 31-41 Bowden St., Alexandria, N.S.W.
and at Melbourne — Brisbane — Adelaide — Perth — Newcastle

YRS

Howard Rider, VK3ZJY, Y.R.S. Supervisor in Victoria, advises that he is leaving at the end of 1967 to take up a position overseas. We wish you all the best Howard and will be interested to have further news from you. I can see the Y.R.S. become more international than ever. Howard is one of the dedicated team to put Y.R.S. on the map and his help has been invaluable.

The Correspondence Section reports four Elementary successes with Honours: Warren Shapcote of Greg Dunne's Group in Queensland, and Chris Lamp, Stirling Finlay and Andrew Lloyd of Alan Nutley's Group in N.S.W. Congratulations to Greg and Alan for such good results.

There are now 34 clubs in N.S.W. with a new one at the Ukarumpa High School in New Guinea. The club leader is Gene Nurkka, VK9GN. There is also a member club on Christmas Island in the Indian Ocean.

There have been many successes since August in N.S.W. For the Elementary the Sydney Grammar School had four, Westlakes R.C. seven, Maitland Y.M.C.A. fourteen, and Sydney Teachers' College six. For the Junior, the Yenda R.C. had two, Westlakes four, and Kingsgrove High had one.

Camp Technology has been held at Mt. Victoria again this year. This has become such a popular camp that this year it was held in two sections. These camps are sponsored by the Inter School Christian Fellowship.

Y.R.S. Certificates have recently been approved by the Duke of Edinburgh's Award Scheme Committee. Information regarding the requirements can be had from Mr. Jack Flynn, Y.R.S. Secretary, 30 Sharp St., Belmore, N.S.W., 2192.

Michael Plummer has taken over the reins of Y.R.S. from Howard Rider and all mail for the Supervisor should be directed to him at 71 Kernan St., Strathmore, Vic., 3041.

There are 19 clubs in Victoria and they have had considerable success with all certificates. The Gowrie Park State School had one success for the Elementary, four for the Junior, two for the Intermediate and three for the Senior. The St. John's College had eleven for the Elementary; Camberwell Grammar had fourteen for the Elementary and five for the Junior. Moorabbin Tech. had ten for the Elementary. Congratulations to all these clubs.

Bert Hollebon, VK5EQ, of Port Pirie, reports a busy time in South Australia. Gladstone R.C. had six Elementary successes, Christie's Beach had two, Port Pirie R.C. had one, and the Kadina R.C. had five. It is of interest that Gladstone had Debra Casey amongst its group and that Debra is the first girl in South Australia to win a certificate.

South Australia has another new club at Port Augusta. For 1967 S.A. had 60 sit for the Elementary examination with 33 successes and 7 successes for the Junior.

73, Mona, VK2AXS.

— . . . —

MAIL TRAIN INCIDENT

(Continued from Page 13)

I looked at the malformed hands, the sad and lonely face and sensed he needed a "lift". Psychically he was "ripe" for the right suggestion—and I had it.

"You're right," I replied. "Amateur Radio's not likely to land you in this mess, unless you broach security or something. Say," I said with an enthusiasm that was really fair dinkum. "I've got a monobander in my Grip. They're a piece of cake to operate. Just throw out a wire, tune it and talk. I'll put it on the air when I get to Mackay. (Harry's home town.) I'm not busy for the next couple of days. Let me show you how it works."

Suddenly a look of sweet anticipation lighted up the shaggy countenance.

"Yeah," he said, suddenly keen. "I'd like to try it out. Hey, come over to my place. I've got a big long wire to work it into."

"Done," I said, "—and let's have a beer on it."

—AL SHAWSMITH, VK4SS

NEW CALL SIGNS

NOVEMBER 1967

VK1JH—J. F. Hurren, 8 Yarrow Pl., O'Connor, 2601.
VK1ZNT—N. R. Telfer, 36 Enderby St., Mawson, 2607.
VK2AOO—A. L. O'Donnell, 51 Hillcrest Ave., Mona Vale, 2103.
VK2APG—F. W. Fowler, Station: 38 West St., Five Dock, 2046; Postal: P.O. Box 127, Burwood, 2134.
VK2BNT—Newcastle Technical College (School of Applied Electricity), Maitland Rd., Tighes Hill, 2297.
VK2BOA—A. A. O'Brien, 28 Alexander St., Hamilton, 2303.
VK2BSP—S. R. Pedemont, 5 Bibby St., Chiswick, 2046.
VK2ZKF—B. A. Jones, 10 Little Edward St., Merewether, 2291.
VK2ZNX—N. K. Shaw, 22 River Rd., Oatley, 2223.
VK2ZZI—D. W. Friend, "Weldon," Old Northern Rd., Dural, 2158.
VK3IA—D. P. James, 22 Massey St., Box Hill, 3128.
VK3UL—A. H. F. Nickols, 15 Wallace St., West Brunswick, 3055.
VK3ABS—G. A. Lane, 12 O'Shannessy St., Nunawading, 3131.
VK3AFH—I. E. Paulke, 80 Isabella St., West Geelong, 3218.
VK3AXZ—E. L. Hume, 104 Asbury St., Ocean Grove, 3226.
VK3AYI—F. G. E. Hoddinott, 16 Bendigo St., Hampton, 3188.
VK3ZEY—H. F. Harden, 33 McComas Gr., Burwood, 3125.
VK3ZLP—J. P. Payne, 5 Llewellyn St., Beaumaris, 3193.
VK3ZUO—W. G. Raynor, 9 Mitta St., Box Hill North, 3129.
VK3ZXI—J. R. McIntyre, "Glenare," Private Bag 225, Drung Drung, 3400.
VK3ZXV—R. J. Pertzel, 16 Simmonds St., Oakleigh, 3166.
VK3ZYP—K. L. Philips, 63 Mullum Rd., Ringwood, 3134.
VK4CR—C. Renton, 16 Wilson St., Booval, 4304.
VK4WT—W. H. Holland, Bells Pocket Rd., Strathpine, 4500.
VK4ZDS—D. A. Morrish, 79 Muller Rd., Zillmere, 4034.
VK4ZHW—H. L. Wickes, 44 Kirri St., The Gap, 4061.
VK4ZTL—D. Laurie, 25 Simla Ave., Geebung, 4034.
VK4ZWJ—R. Webb, 151 Alderley St., Toowoomba, 4350.
VK5AN—J. W. Emmel, 15 Patawalonga Frontage, Glenelg, 5045.
VK5IH—E. Hanham, 7 Short Ave., Glenelg East, 5045.
VK5KW—C. J. Kosina, 18 Wilfred Ave., Salisbury, 5108.
VK5LI—R. C. Cummings, Station: Portable; Postal: C/o. Superintendent, Radio Branch, 31 Franklin St., Adelaide, 5000.
VK5OA—K. L. O'Rorke, 2 Lansell St., Mt. Gambier, 5290.
VK5ZFJ—A. R. Jamieson, 14 Lascelles Ave., Brighton, 5048.
VK6EU—P. W. Dew, 14 Winfield St., Lynwood, 6155.
VK7RO—R. E. Rogers, 1 Wellington Rd., Lindisfarne, 7015.
VK7ZWX—W. J. Morphett, 139 Talbot Rd., Launceston, 7250.
VK9ZFG—A. E. Hiscock, Station: Hubert Murray H'way, Boroko, P.; Postal: C/o. A.B.C., P.O. Box 1359, Boroko, P.
VK0AL—A. Nickols, Amery Ice Shelf.
VK0IA—D. P. James, Macquarie Island.
VK0JW—J. G. Kaarsberg, Wilkes.
VK0VK—V. J. Kitney, Mawson.

CANCELLATIONS

VK1DS—D. J. Slade (Capt.). Transferred Interstate.
VK2GS—G. P. Edwards. Licence not renewed.
VK2VM—G. W. Morris. Deceased.
VK2AMS—R. J. Stick. Deceased.
VK2ASY—S. A. Sibly. Transferred Interstate.
VK2ZHT—H. E. Jones, Transferred Interstate.
VK2ZLK—K. J. Corr. Not renewed.
VK2ZNT—N. R. Telfer. Now VK1ZNT.
VK2ZYM—R. C. Morgan. Transferred Interstate.
VK3AKQ—A. E. H. Swindon. Licence not renewed.
VK3ALI—G. J. H. Dunkley. Licence not renewed.
VK3ZBN—G. A. Lane. Now VK3ABS.
VK3ZPO—D. P. James. Now VK3IA.
VK3ZRL—W. R. Dickson. Licence not renewed.
VK5ZFT—B. C. Thoman. Licence not renewed.
VK6EK—E. F. Keagan. Left country.
VK6DR—W. H. H. Wedemeyer. Deceased.
VK7XL—G. W. Groves. Deceased.
VK9HS—N. E. Parsons. Transferred to N.S.W.

— . . . —

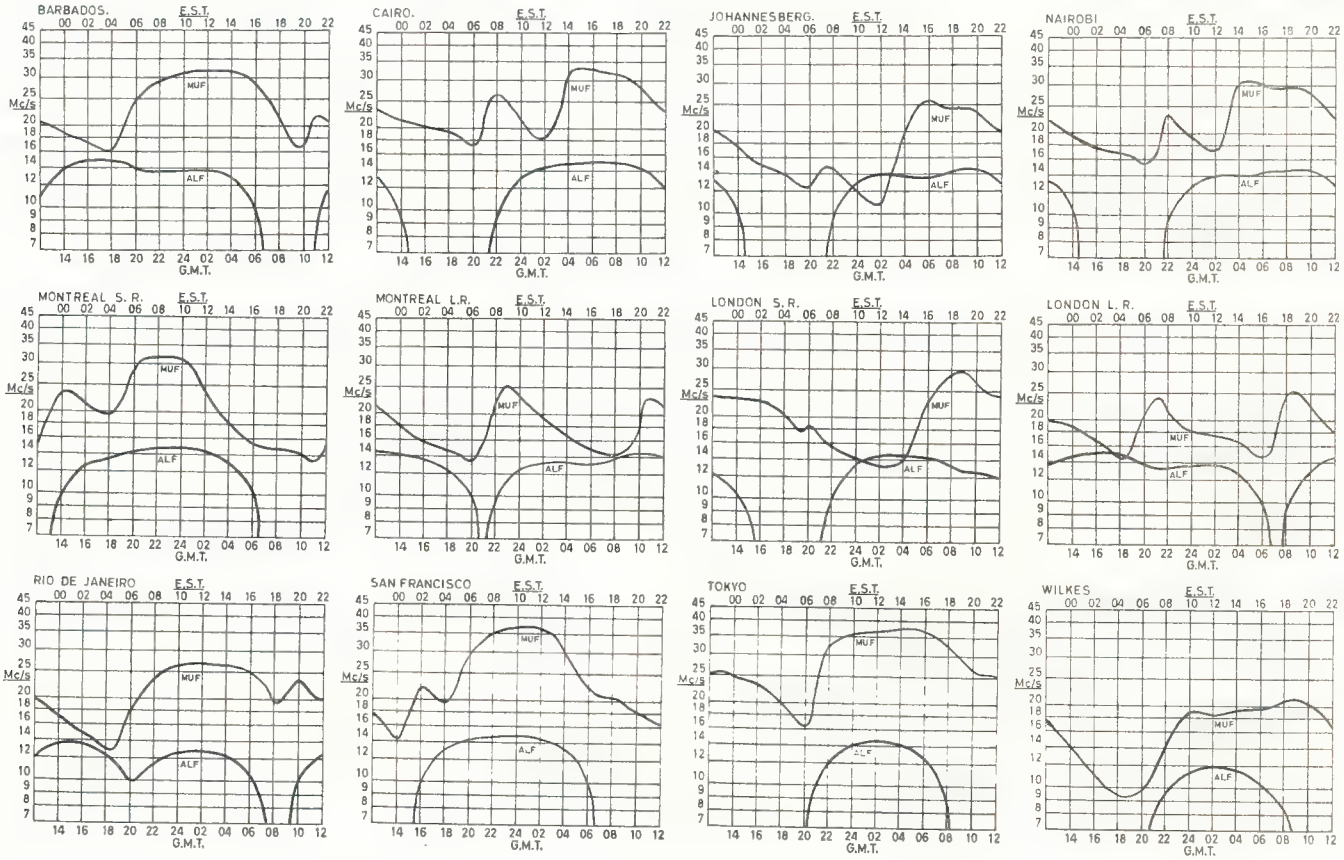
KEEN DX'ER

JIRI KRAL, OK2RZ

Jiri is an f.b. operator using 14, 21, and 28 Mc. A1/A3. He is keen to work VK. You won't miss his big signal. He is one of the modern young group of DX'ers. Give him a shout. His address is Hostalkovice 288, Okres Ostrava, Czechoslovakia.

PREDICTION CHARTS FOR MARCH 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

A very big welcome to all for 1968 and many thanks to all who sent greetings. I trust you have a very successful year and look forward to hearing from members regularly.

This month's notes will be restricted to information on hand at the time of writing, as I will be leaving here for a further two weeks at Oak Flats, and with two large groups of hungry teenagers to cook for, I guess I won't have a lot of time for note writing. I will, however, have a tape recorder and the six metre gear with me this time and hope to hear some DX down there.

What is on 6 metres? This question has often been asked, and for an answer I hand over to the former sub-editor of this page, Mac Hilliard who has probably had more experience on this band than the average listener.

"Many S.w.l's and Amateurs shudder at the thought of operating on the v.h.f. bands. "Why go on the v.h.f's, no one will talk to you up there, or even listen to you, and if you get a contact, it will be only over the back fence." Anyone with these ideas is certainly on the wrong track, nevertheless you can't expect to work European DX. However, the distances covered on the v.h.f. bands are more than just a few miles, 52 Mc. for instance is an excellent band for local contacts all the year round, with no QSB as experienced on h.f. bands, and the QRM position is negligible compared to the lower frequencies.

"During the months of November through to January or early February this band is capable of producing S9 signals from all VK States, plus ZL and VK9. Naturally you cannot expect to work or hear the band open every day, however there should be many days in this period in which excellent signals will be heard. The peak of the DX season should be in the last week or so of December. During the period of maximum sunspot activity, 52 Mc. and down to 50 Mc., if you can tune, is worth watching for DX of world wide proportions.

"Naturally some areas of VK are more favorable than others for these conditions to exist. However, all VK States have at times enjoyed these conditions. Contacts between VK4 and JA are commonplace, also XE and W6 stations on the Pacific have been contacted from VK also 9M2. These conditions are most likely to be prevalent during the period of the equinox, Oct.-Nov. and March-April.

"During a period of large magnetic disturbance, the possibility of Auroral activity is a factor and some very strange effects can take place. If you have a beam, you should point it at the aurora, local stations on a.m. will sound garbled, with what can be described as a growl or buzz on the frequency, and it is a good possibility that stations from other States will be heard. However, the only successful mode of operation under these conditions is c.w. Much more could be added to these notes by the experts, however the foregoing findings are from the S.w.l's viewpoint."

Thanks Mac, and if any of the v.h.f. experts have anything to add, which would be of interest to the listener, would you please pass same on to me and I will include it at a later date.

In the E.A.R.C. bulletin for December, there appears a list of stations worked from their v.h.f. editor's QTH up to 13/12, and they include all States except VK8 and 9, and three contacts with ZL—all on 6 metres. The best I have heard this season was VK7SS and VK7WH.

IN THE BEGINNING (Part Two)

A Big Advance, 1923-28, by Harry Major

In 1924, dull emitter valves were becoming more readily available, and as they required only 0.06 amp. at 3v. they were much more economical than the older bright emitters. Their efficiency was largely due to the new type of thoriated filament, but the filament voltage was critical, and it burned out rapidly if overheated. Using two 1.5v. dry cells on a one tube set was sufficient, but on multi-valve sets an accumulator was necessary. As these gave 4 volts, it was the practice to control each valve with its own rheostat, although in a 4-tube set each of the valves were of the same types, each could be performing a different function, r.f., det., 1st and 2nd a.f.

My first valve set used an Ediswan AR06 dull emitter in a regenerative circuit, but alas, the valve went west when I was trying to get a little extra out of it. Next came a 4-valve t.r.f. using four Philips A310s, and a Sterling Floral Speaker, replacing the inverted earphone in a china basin.

In 1924 a.c. was becoming common, and this led to some great advances in radio. Battery eliminators were available on a commercial or home-made basis in 1926, and the troublesome "B" batteries began to disappear, thus making it possible to use a higher voltage up to the maximum allowable on the valve rating, and, in fact, many valves were often heavily overloaded, but we achieved results.

Most sets used regenerative detectors, and whilst the results were good, they often caused interference by too closely coupled feedback. In 1925 some experimenters found that a Ford ignition coil could make a spark transmitter, with the aid of a key in the primary circuit, and a spark gap in the secondary. A large, and often untuned antenna completed the outfit. It was not long before the ether became a mass of jumbled blips and blabs, and nothing was discernible, so fortunately all scrapped the idea. We had very little practice in either sending or receiving Morse, in any case hardly knew the code sufficiently to read more than two or three w.p.m. During this period, the Amateurs had been working between 200 and 500 metres, and with the beginning of National and B class stations, in this range, the Amateurs were re-allocated lower bands.

Mr., later Sir Ernest, Fisk gave a demonstration to a Melbourne audience in Queens Hall in 1920 of what was advertised as "real broadcasting". In 1925 a new radio magazine appeared in Melbourne. This was "The Listener In," which gave programmes, items of interest and circuits, plus helpful hints for constructors —this helpful section being carried on for many years. In fact, it was for a long time the main source of information.

An official list of Victorian transmitting stations at the time were 3AR (Assoc. Radio Co.), 3UZ (O. J. Nilsen), 3WR Wangaratta (L. Hilliar), 3EO Mildura (R. Egge), and 3PB in Brighton, which was a projected station for Mr. Pemberton-Billing. There was a sudden expansion of radio shops, catering for home constructors, in Swanston Street (Melbourne) alone—Cohn, Robothams, Vealls, Homecrafts, British Aust., Climax—and another opposite the library catered for the home builders' needs. Homecrafts advertised a crystal set guaranteed to separate 3LO and 3AR for £6 including earphones.

In 1927, a good 7-valve battery operated superhet cost £66, and later a short-wave attachment was made available for £4/10/0. The super was becoming more popular due to the ease in which stations could be separated, and of course the better reproduction was a help too. The t.r.f. sets had two or three dials, covering the single-gang condensers. Plug-in honeycomb coils mounted on suitable holders were used, these gave greater selectivity, and were easily changed, the old tapped coils with their multi-stud contacts were banished.

Interstate stations could now be heard, 2BL and 2FC, 5CL and 5DN, the latter two being well received in the later hours after the Eastern stations had closed. Later came 3DB, designed and built by the Holst Bros. of Caulfield, who operated their own station VK3BY which gave us many hours of musical entertainment. Otto Holst passed away recently, whilst his brother pre-deceased him by several years. (We note here that the broadcasting stations did not open on Sunday until lunch time or shortly after, prior to which Amateurs were permitted to operate on the broadcast band, VK3PA being one of many.—L2022.)

In the early 30s, electric sets began to appear, both directly and indirectly heated valves being used. The number of tube types increased, screen grid and pentodes amongst them, each giving more power than several of the old battery types. The Amateurs, who had up to now been working on fairly low power and receiving remarkable results, were now able to build more powerful transmitters, overseas countries had commenced transmitting to the rest of the world, and their reception in this country became more frequent. (To be continued)

PERSONAL NOTES

Peter Drew, back in VK6 for Christmas leave, sends in a huge list, including some fantastic loggings on 10 mx. Bryan Prosser, back in Perth after a long trip away, found all gear and QSLs had been destroyed by fire. Syd Underwood and Mac Hilliard spending a lot of time on Mac's 6 mx gear. Ernie Luff is okay again after op., with a long list of new confirmations and busily chasing awards, and cards from TF2WKH, VK9XI, EL2AC, 4U1ITU, HI3JHV, W9HQF, LX1RB, U5ARTEK, 9H1HB, KR6LL, FG7XL, VK9TB, ZS5FN, 9G1GF, VP6EW, plus many of the more common ones. A late one was CR4BC. Ernie went to Fiji on the Orsova on 18th Jan. for a holiday cruise (the day I went back to work, Ern).

Alan Raftery was back at the set over the holiday period; he too has a good list of calls heard on 14; new QSLs to him are DU7SV, 9V1NY, UP2NV, VP9FR, FB8YY, W0MLY, HB-9JZ, IIZBS, UW3BJ and UA4KED. On Dec. 30 Alan logged three stations signing themselves JH; can anybody assist him as to identification? All were operating from JA. L2022 on holidays, and the receiver hasn't been on for weeks, only logging made was on 6 mx, and this was VK7SS. Inward cards: 9M2PO, 9M2LO, OZ4DX, OH3MF, UM8AP, UV3EZ, OX3JV, CR6AI and W9FJX. Due to the lapse of time between the Jan./Feb. notes, I have omitted to list any calls heard as, by the time you got them, they would be old news.

OVERSEAS LISTENERS

Louis Rybroek has been one of the top S.w.l's in the world for around 12 years, in which time he has rattled up 294 confirmations in 40 zones. Rx is the oft used Trio 9R59, which he says is a very selective receiver and does a good job under European conditions. His antenna on the higher bands is a long wire, but for 2 mx he uses an 8 el. beam. Recently he got his restricted licence and uses the call PA0LRK on the v.h.f. bands. For some time, Louis has been the S.w.l. Secretary for V.E.R.O.N. and six years the chairman of his particular club. V.E.R.O.N., which is the recognised radio society of Holland, caters for the S.w.l. in no uncertain manner, realising that a contented S.w.l. will stay with his home society when he eventually gets his ticket. Each S.w.l. has a NL number, and there are over 400 in PA-land. They have free use of the QSL Bureau and the V.E.R.O.N. magazine devotes four pages per issue to the S.w.l. section, as well as encouraging the listeners in their activities. His report to us came via tape and the machine used is a twin track Grundig.

DX NEWS

From Peter Drew, the following QTHs: ET3REL via W5LEF; CE0AE via WA5PUQ; VK2ADY/9 via K0TCF; VR2DI, Box 184, Suva; PK8YBC, 31 Salam St., Bandung; HM5BF, Box 4, Nth. Pusan, Sth. Korea; WA8TFJ, 4X4UJ/K5, WA1EJM, G3OKQ and WA1FHU all via the I.S.W.L. London; VQ9JW was on Aldabra; AP2AD, Box 94, Lyallpur, W. Pakistan; VU2DKZ on 21 s.s.b. is in India; YN1BKC C/o. U.S. Embassy, Managua.

QSL LADDER

For new readers, this is a list of confirmations, countries heard, etc., from W.I.A. S.w.l's only. The listings are open to any member who does not hold a transmitting licence of any grade, and are listed in order of the number of confirmations. Countries heard are of a secondary importance, and to be eligible, you must have a minimum of 10 countries (as listed in the W.I.A. countries list) confirmed. This chart is published every three months. Scores not notified after three months will be deleted.

Leader at the end of 1967 was Eric Trebilcock, my list shows 293 confirmed, 299 heard in 40 zones, with 50 American states. I understand, however, that Eric has passed the 300 mark. Second is Peter Drew of VK6 who has been on National Service for the past 18 months; he has at last count 197/265/38/41. I have No. 3 position with 177/307/40/35, whilst Ernie Luff over there in VK5 is right there with 162/236/37/38. Mac Hilliard comes next with 103/252/33/14, then Alan Raftery on 84/201/31/13.

To give you an idea of how our chaps stand in world ratings, here are the top eight in the I.S.W.L. list, with number of confirmations and zones confirmed. Klopsch (DL), 323/40; Eriksson (SM), 312/40; Hammond (VE), 305/40; Waite (W2), 305/40; Graham (GM), 302/40; Noon (VE3), 300/39; Woodley (VE3), 299/40; Trebilcock 295/40. I am in 31st position and Ernie Luff, the other VK, is on 38th. There are slight differences between the I.S.W.L. list and ours, but not enough to alter the positions to any extent.

At the end of the year I will again give you the world top ten or so, and we will see how the VK chaps are progressing.

That winds it up for this month chaps, remember closing date for all material is 25th of the main. 73 de Don L2022.

BRIGHT STAR CRYSTALS

FOR ACCURACY, STABILITY, ACTIVITY AND OUTPUT

Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, B7G, Octal, HC-18U.

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE AVAILABLE IN FT243 HOLDERS:

6280, 4095, 4535, 2760, 2524 Kc.

5,500 Kc. T.V. Sweep Generator Crystals, $7.25; 100 Kc. and 1000 Kc. Frequency Standard, $17; plus Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application.

455 Kc. Filter Crystals, vacuum mounted, $13 each plus Sales Tax.

ALSO AMATEUR TYPE CRYSTALS — 3.5 Mc. AND 7 Mc. BAND.

Commercial—0.02% $7.25, 0.01% $7.55, plus Sales Tax.
Amateur—from $6 each, plus Sales Tax.
Regrinds—Amateur $3, Commercial $3.75.

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Carrel & Carell, Box 2102, Auckland.
Contractors to Federal and State Government Departments.

BRIGHT STAR RADIO

LOT 6, EILEEN ROAD, CLAYTON, VIC. **Phone 546-5076**

With the co-operation of our overseas associates our crystal manufacturing methods are the latest.

SSB EQUIPMENT

for the Radio Amateur, from the Yaesu Musen Co. Ltd. of Japan.

Professional quality at Amateur Prices.

- ★ **Transmitters: FL400, FL-50.**
- ★ **Receivers: FR-400, FR-50.**
- ★ **Transceivers: FT-DX400, FT-100, FT-50.**
- ★ **Low Pass Filter: FF-30DX.**
- ★ **SSB Generator, 5172.4 Kc., with crystal filter.**

Brochures available on request.

Also stocked: SWR meters, amphenol type co-ax. connectors and adaptors, PTT mics., microphone "curly" cords, and Hi-Gain tri-band beams.

Obtainable from the Aust. agents:

Bail Electronic Services

60 SHANNON STREET,
BOX HILL NORTH, VIC., 3129
Phone 89-2213

Rep. for N.E. N.S.W.:
MOSMAN RADIO SERVICES
P.O. Box 198, Tamworth, N.S.W., 2340

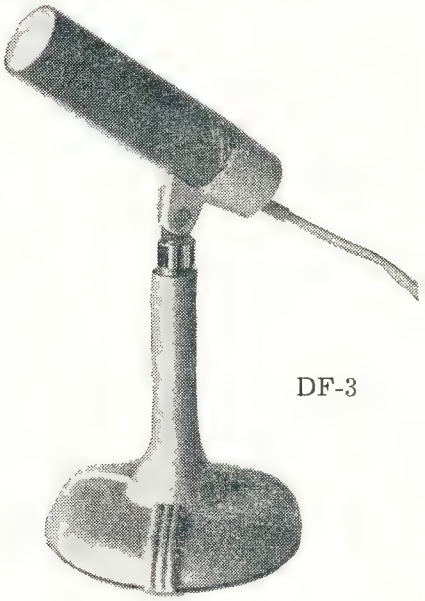
FOSTER DYNAMIC MICROPHONES

SPECIFICATIONS:

Output Impedance .... 50 ohms or 50K ohms
Effective output level .... —55 db. [0 db. = (one) 1V. Microbar]
Freuency response .... 50 to 15,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm.
Size: 4½" long, 1¼" diameter.
Cable: 12 ft. of P.V.C.
Swivel fits ⅝" 26 t.p.i. Stands.
Colour: TWO-TONE GREY.



DF-3

Retail Price 50K ohms: $9.60 + Sales Tax $1
Retail Price 50 ohms: $9.40 + Sales Tax 98c

A QUALITY PRODUCT FOR TAPE RECORDERS & P.A. USERS

Marketed by **ZEPHYR PRODUCTS PTY. LTD.**

70 BATESFORD ROAD, CHADSTONE, VIC., 3148 **Phone 56-7231**

Manufacturers of Radio and Electrical Equipment and Components

W.A.— S.A.— Tas.— N.S.W.— Qld.—
Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L.; Jacoby, Mitchell & Co. P/L.; T. H. Martin P/L.

DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld., 4101

Conditions on all bands these past few weeks seem to be holding up very well. 80 mx has opened to Europe and Asia on odd mornings briefly around 1845-1915. Some QSOs have been possible. Forty has been good to Africa and Europe, from 1700 almost nightly with some rare ones coming through strongly. 20 mx is quiet but open day and night, particularly after 1700 to the West. 21 Mc. is best from 1100 until 2000 and later. Firstly Europeans then Ws at 1700 and finally the odd Central American and Indian. Ten now opens a little later at about 1030 to Europe. If the band seems blank, try a CQ or two. The result might surprise you.

NOTES AND NEWS

Afghanistan: YA3TNC 14001 1400. Also audible at this QTH 1900.

Aldabra: VQ9JW still QRV on all bands. Lately using the frequency 14170 at 1800. Also has skeds with ZS stations 21380 1800. John goes QRT in March, so if you still need a QSO chase him up. He also uses 7005 1900 occasionally and 28600.

Bahrain: MP4BEC is daily active on 7004 1900 and on 14 c.w. a little before or after this. MP4BCC uses s.s.b. 14193 1330. Also MP4BEC 7005 1900z.

Hong Kong: VS6CO 14180 1000. VS6DO 7 and 3.5 at low end, 1000 and later. VS6GN 14060 1300. VS6AG 14150 1300. VS6FZ and VS6FX both use 21 and 28 c.w. from 0900z.

Galapagos: HC8RS 14170 2200. QSL 5757 Guayaquil, Radio Club, Ecuador. HC8FN also reported active but no information on same.

Tchad Rep.: TT8AN 14068 2200. QSL P.O.B. 443, Ft. Lamy.

Central Af. Rep.: TL9DL. Only information on this one is that the QSL goes to the U.S. Embassy, Car.

Cape Verde: CR4BC 14170 1800. QSL P.O.B. 36 St. Vincent, Cape Verde Is.

Cameroun: TJ1AS 14002 2200. TJ1QQ 14008 0730. TJ1AG 14006 1900.

Burundi: 9U5BB 14204 0500.

Easter Is.: CE0AE 21260 2200. QSL WA5PUQ.

Indonesia: PK1SH 14020 1200. QSL P.O.B. 2127, Djarta. (see below)

Ivory Coast: TU2BX 21232 2200. P.O.B. 20647, Abidjan. TU2BQ 21331 2300, P.O.B. 1617, Abidjan.

Senegal: 6W8BM 14221 0900. QSL P.O.B. 290.

Sao Thome: Al CR5SP 14187 0630. QSL to W2GHK.

San Andreas Is.: HK0BKX reported on 7 Mc. s.s.b./c.w. QSL WA6AHF.

Saudi Arabia: 7Z3AB 14215 1700. QSL W4YDD.

Nepal: 9N1MM 14186 1030. QSL W3KVQ. (VK2AOU)

Mauritius: VQ8CA 14105 1900. VQ8CC 14185 1200, also on 14 c.w. around 1800-2000.

Malawi: 7Q7EC reported going QRT about now, but 7Q7LC will take his place on c.w. Try 14045 1700 and later. QSL W4NJF.

Maldive Is.: VS9MB is on nightly 14050 1700 onwards. QSL W2CTN.

Vietnam: XV5PV on 7005 approx. most mornings at 1900. Name is Chinh. QSL Box Pat -0, 53, Saigon.

Swaziland: ZD5X is a regular on 14 and 7 Mc. He can be picked up on the latter at 1900. QSL P.O.B. 49, M'babane.

Tristan da Cuhna: ZD7SN 7008 any time after 1700. QSL W1SZU.

Caicos Is.: VP5YL 7008 1900. Name Susan/YL. QSL via A.R.R.L.

Barbados: Remember the ever active VP6PJ on bands 7, 14, 21. He is now using the call 8P6BU. QSL to Col Jones, Hillcrest, Palm Beach Gap, Hastings, Christchurch, or via WB2UKP. Several others active from here.

Mongolia: JT1AA 14050 0800. Note T9c.

Algiers: Harry 7X0AH QRV on all bands c.w./s.s.b. but is sometimes on 7003 1900. Also 7X0WW, 7X2ED and others.

Sierra Leone: 9L1JJ who is G3HZP is QRV using a KW2000 on 28600 around 1000 and earlier.

Argentine Is.: VP8IU 2000 14108. QSL to VE7AON.

Bouvet Is.: As reported earlier, any activity from here prior to 1/1/68 may not be valid. 3Y0EB is said to be on 14103 0600 and asking QSLs to be sent via W0GTA.

Fernando Poo: EA0CM/HB9CM will be leaving here shortly. Another op. will take his place. Mode 14 s.s.b. 1700. No other information. EA9AH audible here 14008 1700.

Turks Is.: VP5AA 28600 1500.

Glorieueses Is.: FR7ZO/G 14080 1600. QSL P.O.B. 4, Saint Clothilde, Reunion Is.

West Samoa: 5W1AS 21270 0900. Also used 14 s.s.b. Occasionally c.w. 5W1AT 14170, QSL WA4ZDI.

Seychelles: VQ9L 21303 1400. VQ9B worked here 14145 1800, says he may be there two more years. QSL P.O.B. 191, Mahe.

Pitcairn Is.: Tom Christian reported his honeymoon in U.S.A. as super. He arrived back home in his Utopia and re-commenced his Amateur Radio activity on 21335 at 1900.

Rodriguez: VQ8BZR. This stint is now QRT. QSLs go to H. S. Lambert, La Cavernes, Vacos, Mauritius.

Iraq: YI2AC 14209 s.s.b. and c.w. 1400. (Unofficially reported as a phoney.)

Spanish Sahara or Rio de Oro: EA9EJ again going great guns both c.w. and s.s.b. Try 14116 1700 and later. Also c.w. around 1900.

Don Miller, W9WNV: Reported as saying he is toying about going **back** to Heard Island?

San Felix Is.: Has been on 14 s.s.b. Seems now that QSLs go to XE2NZ. Call is CE0XE.

Antarctica: John VK0JW should be on from Wilkes Base now. He is ex VS1JW, 9M4JW, 9V1JW, 9M6JW, VK2BJK, VK4GU. Send his QSL to Norm VK3UO, 181 Victoria Rd., Northcote, Vic., 3070. Freq. will be 14075.

W9WNV, Don Miller: That man again. Says his 200-page book, "Amateur Radio DX" will be published about March. Now that could be a dandy. (I must confess I'm interested.—Al.) Profits from the book will go to future DX-peditions. (Does he never get tired? Well, I am.)

Daito Is.: A couple of ops. from Okinawa intend to activate this one during February and maybe into March. Call will be KD6——. No other info available. (Guess I'm the only VK to have worked KD6 before this—but still no QSL, hi.—Al.)

ACTIVITIES

Dud VK4MY is dividing his time between 14 c.w. and s.s.b. and not missing much. On s.s.b.: CE3UF/0 (Fernandez), CE3ZN/0, FR7ZG, VQ8BZ (Rodriguez), UW9YQ (Zone 18), CP-5BK/8, VP2AA (Antigua), 9M2PO (Malacca), HK4TA, 7Z3AB, 4A7PB, HS1CB, TI2AAC, PK8YJO, PJ2CZ, VP2AZ, PZ1CI, HI8LAL, 9Y4AR, UT5RP, UV3AAE, 9N1MM, 8P6AH, FG7XX, VS9MB, HM1AJ, IT1PZA, 4X4FQ. On c.w.: UD6KBO, VP6PJ (now 8P6BU), CT3AS, VP1DM, HP1IE, ZP5JB, HM5BF, XW8BP, KX6ER, 9H1AE, UV3AAM, CO8AY, HM2CM, UP2PA, IT1VRS, ET3REL, FY7YM.

Peter VK4PJ reports all bands holding but has not been very active of late. He worked 14 s.s.b.: CO8MN 14125 1215, 9U5BB 14170 2020, 5H3JL 14145 2040, 7Q7EZ 2100, JT1KAA 14140 1125, VP5AA 2115, VP2DT 2050, 7Q7AM 2044, ZS2H 2030, UW9AF 0930, UA3UV 0840. Peter mentions one bad operating habit of which both VKs and others are guilty. Overdone CQs. This only results in a heap of QRM at the end of the call.

David VK3QV back on his favourite band and really proving that ten is **hot**, lists the following: EP2GI, F3II, F5RV, DK1KT, DL7HU, DL9OH, DJ1ZT, DJ4AX, DJ9HR, GI3IVJ, HB-9ADQ, HB9ZC, HB9RB, HR1DX, 11PGL, IS1SCB, KR6KS, KR6TAB, OE3SGA, ON4OR, OZ3FL, OH2BR, OH5VY, SM3BIZ, SM6CMK, UV3AAE, VE3FGW, VU2QR, 4X4UL, KP4FS, plus stacks of Gs, Js and all U.S.A.

Dave supplies the following propagation information: 1300-1330 Europe s.p., 1400 Middle East areas, then a little later to W on the l.p. This is the first l.p. report on 28 Mc. (Thanks OM, your comments are much appreciated.—Al.)

Barry VK5BS, our QRP co-ordinator in VK, who is also a technician at Woomera, logged these on 14 c.w.: UG6KAA, SM4CMG, UL7RR, HP1IE, TG0AA, KV4AM, XW8BP, AP5HQ, YV6ANA, 6Y5GS, 9V1OP, UQ2KBC, KZ5ZN.

Brian VK2AND breaks the ice in this column with a nice list of 20 s.s.b. worked: XE2III 0730, VU2DKZ 1038, DU7SV 1100, KG6IF 0148, EP2BI 1253, 5Z4KL 1305, 7X0AH 2131, LU1DAB 1033, 9M2PO 1100, PJ2MI 1107, VP9BY 1245, XW8BZ 1234, PJ3CC 1311, VP1PV 1300, VP2GAI 1138, OA4XN 1008, 1233, 9N1MM 1233, HR1KAS 1335, HI8RGB 1158, PJ2CK 1119, HK4TA 1153, YK1AA 1856, 7Q7PBD 1956, KW6GJ 0824, KG-6GF 1207, UA4IF 1332. Brian has his sights on WTW 100 on s.s.b. 14 Mc. Then we will hear him back on A1 mode. (Good luck OM, please some more information.—Al.)

Don VK3AKN sends in a staggering 28 Mc. DX worked list. Here are just a few: ON4ID, ZC4FB, GI4RY, UW6LC, OZ3JR, PA0DC, 4X4WF, VE3IT. HM1BB, UL7JT, LA9XP, ZS-5LB, ZS6D, 9J2BC, YO9APJ, OH2OW, UP2ADZ, etc. (Your letter delayed en route OM, please send more.—Al.)

SOME QTHs

VP2AZ—QSL W0NGF.
CE0AE—QSL WA5PUQ.
9N1MM—QSL W3KVQ.
8P6AH—QSL VE3DLC.
VP2AC—QSL WA4AYX.
HM1AJ—QSL P.O.B. 2806, Seoul, Korea.
CT3AS QSL G2MI.
HP1IE P.O.B. 6604, Panama 5.
ET3REL—QSL W5LEF.
YS1FSE—Does not QSL.
VK9XI—QSL W2GHK.
VP6AO—QSL VE3DLC.
VP1PV—Box 17, Cayo.
5U7AN—QSL 5U7AL.
TJ1QQ—QSL W4DQS.
OD5BZ—QSL W8ZCQ.
ZS2MI—QSL W4NJF.
5N2AAX—QSL W7VRO.
5R8AS—QSL W6ZPX.
PX1IE—QSL F9JS.
9L1GQ QSL K4MQG.
GD3RFX—QSL K4MQL.
KG6IF—QSL W6ANB.
OX4AA—QSL K8REG.
6Y5GG—VE4XN.
9N1MM—Father Moran in Katmandu. QSL to W3KVQ, E. W. Harrowey, Jnr., FRD 2, Tioga, P.A.

AWARDS

Worked 100 U Stations (W-100-U)

The award is issued by the Central Radio Club of the U.S.S.R.

1. W-100-U is available to all Amateurs of the world for two-way contact with at least 100 U.S.S.R. Amateur Radio Stations, including at least 5 UA, UW9 stations. The contacts to be made after 1st January, 1959.
2. The contacts to be made on c.w. or phone, on one or more of the Amateur bands (3.5, 7, 14, 21, 28 Mc.).
3. Minimum reports to be RST337, RSM 335.
4. The 100 cards of the contacts must be sent to the Central Radio Club, with a list of the same, giving date, time, band and other details of the QSOs.

Address for the application: Central Radio Club, P.O. Box 88, Moscow, U.S.S.R.

RADIO AMATEURS (OR SHAMATEURISM) IN INDONESIA

Around the latter part of 1965, when the power of Dr. Sukarno first began to wane, there arose mainly among student groups many Amateur Radio stations.

It is not known if these rigs were used for political purposes, but they have, until now, provided a daily programme of Western style popular music, with each station charging a small fee for each record played.

General Suharto has now issued a decree banning this type of Mass Media Entertainment. Only those who intend to operate bona fide experimentally, will be issued with a licence.

Several PK stations have appeared in recent weeks on the DX bands, with modes of s.s.b. and c.w. It is to be hoped that the activities of these chaps are not curtailed, as they are in big demand the world over.

QRP CLUB NEWS

New members include VKs 3AQ, 3AHG, 9JL, 4WO and S.w.l. Thorpe. A new innovation will be the quarterly QRP QSO Parties. This might help to liven up the club a little. Unfinancial members will you please pay your dues. Membership may be withdrawn from those who after a certain period have not come to the financial party. Please write to Barry VK5BS for any queries you have about the club. QTH is 18 Cornish St., Glenelg North, S.A.

My thanks, as always, to the column's supporters. 73, DX, Al VK4SS/I.A.R.J.S.

PROVISIONAL SUNSPOT NUMBERS FOR DECEMBER 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R.	Day	R.
1	131	16	160
2	126	17	172
3	89	18	170
4	75	19	129
5	71	20	141
6	88	21	130
7	126	22	105
8	131	23	101
9	113	24	83
10	114	25	111
11	112	26	142
12	110	27	140
13	124	28	165
14	140	29	141
15	151	30	121
		31	108

Mean equals 123.2.

Smoothed Mean for June, 1967: 87.8.

Predictions of the smoothed monthly Sunspot Numbers for the coming six months:

January	110	April	117
February	113	May	117
March	115	June	116

Contest Information

CONTEST CALENDAR

2nd/3rd March: 34th A.R.R.L. International DX Competition (2nd week-end phone).
9th/10th March: B.E.R.U.
16th/17th March: 34th A.R.R.L. International DX Competition (2nd week-end c.w.).
6th/7th April: "CQ" WPX Phone Contest (s.s.b. only).
11th/12th May: 17th OZ-CCA Contest (c.w. only).
12th/13th October: 21/28 Mc. Phone Contest.

— • • • —

1967 "CQ" S.S.B. CONTEST OCEANIA RESULTS

AUSTRALIA

Call	Band	Score	QSOs	Prefixes Wkd.
VK2KM	21	159,768	432	126
VK2APK	14	348,520	709	168
VK3AXK	A	117,484	439	92
VK3XB	A	1,380	25	20
VK3QV	28	67,368	276	84
VK3SM	21	17,907	134	47
VK3ARX	14	47,970	199	82
VK3KS	14	330	11	10
VK4PJ	A	4,176	48	29
VK4WF	21	30,016	159	64
VK4DO	14	27,000	129	72
VK5AX	14	9,702	70	49
COOK ISLANDS				
ZK1AR	A	239,355	622	135
HAWAII				
KH6IJ	A	550,197	1,790	113
W0PAN/KH6	A	211,014	638	114
KH6BZF	21	42,903	232	63
WB6FHL/KH6	21	37,296	206	63
LAOS				
XW8AX	A	521,888	1,001	188
TERRITORY OF NEW GUINEA				
VK9GN	A	501,670	1,009	170
VK9KS	14	51,597	228	81
NEW ZEALAND				
ZL1KG	A	1,042,152	1,417	251
ZL1AIX	A	556,052	1,128	172
ZL3AB	28	35,955	248	47
ZL1AGO	21	112,548	346	113
ZL4BO	21	19,494	129	54
ZL1AAS	14	144,160	363	136
PHILIPPINES				
DU1FH	A	412,344	779	184

CONTINENTAL LEADERS

28 Mc.	VK3QV	67,368 points
21 Mc.	VK2KM	159,768 points
14 Mc.	VK2APK	348,520 points

7 and 3.5 Mc.: No entries.

MERITORIOUS OPERATION

Highest All-Band Score—Single Operator:
ZL1KG .... 1,042,152 points

— • • • —

1967 A.R.R.L. INTERNATIONAL DX TEST—AUSTRALASIAN RESULTS

PHONE

Call	Score	Multipl'r	Contacts
VK2APK	910,860	190	1,598
VK3ZR	540,216	164	1,098
VK2WD	236,988	116	681
VK3ARX	56,964	47	404
VK2VN	42,822	61	234
VK3XB	7,884	35	73
VK3KS	1,275	17	25
VK2FU	1,459,773	203	2,397*
VK9GN	168,300	110	510
ZL1KG	1,522,125	205	2,475
ZL2QH	860,310	158	1,815
ZL1AGO	560,001	173	1,099
ZL1IL	266,832	109	816
ZL3AB	51,528	76	226

* Multi-operator.

C.W.

VK2EO	1,571,760	222	2,360
VK3AXK	817,908	182	1,498
VK2GW	487,056	146	1,112
VK2VN	219,438	146	501
VK5TC	172,078	97	593
VK5KO	82,626	31	131
VK4FH	52,920	63	280
VK3XB	34,860	70	166
VK4FH	33,040	40	276
VK3APN	28,987	41	238
VK3OP	26,828	38	236
VK3KS	15,732	46	114
VK3UM	6,696	24	93
VK4WO	1,260	14	30
VK9GN	159,840	120	444
ZL3QH	1,012,092	193	1,748
ZL1HW	354,560	128	945
ZL1AFW	183,486	106	577
ZL1AMQ	80,928	48	562
ZL1OY	37,620	55	228

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

THANKS FROM MACQUARIE OPERATOR

Editor "A.R.," Dear Sir,

Having just returned from Macquarie Island, I would like to express my sincere thanks to the many Amateurs who helped me and other personnel of the Macquarie 1967 expedition during that year. I can assure all those Amateurs your help, whatever form it took, was most appreciated.

My special thanks go to Sam VK7SM who patiently took my logs over the year and sent them regularly to Greg VK7ZKJ who acted as my QSL manager and did such a first class job. Many thanks to you both, Sam and Greg, for a terrific job well done.

My appreciation to those Amateurs who patiently waited their turn for a QSO, but to those who couldn't wait their turn and persisted in interrupting established QSOs for a new country or what ever other selfish reason they may have had I can only say I am glad there are more who play the game than there are who don't.

Those who lived up to the Amateur's Code made Amateur operating on Macquarie a wonderful experience—but those who didn't made it distasteful often. I certainly hope to have an eyeball QSO with the many friends I made whilst on Macquarie through Amateur Radio. A great hobby particularly whilst down South.

—Rodney Champness, VK3UG, ex VK0CR.

— • • • —

THE "XL" OPERATOR CLUB

The name of this fraternity has tow meanings: (1) The Latin figure XL stands for "forty" and (2) The English pronunciation of XL is "excel" or "excellent".

The membership of this fraternity is based on long-term service and excellent achievements in the fields of Amateur Radio. The "XL" operators could claim to belong to the "High Society" of Amateur Radio. The requirements of this fraternity are intensive activity of many years on various Amateur bands.

A minimum of forty (40) points is required for the membership. The points may be earned as follows:

1. Five (5) points for the first full 10 years the applicant has been duly licensed as transmitting Amateur, **plus** three (3) points for each full five years thereafter.
2. Five (5) points for the **first 200 DXCC** countries confirmed, **plus** three (3) points for each additional 50 countries confirmed.
3. Five (5) points for **each** 100 DXCC countries confirmed on **each** of the 28, 21 and 14 Mc. Amateur bands.
4. Three (3) points for each 50 DXCC countries confirmed on **each** of the 7 and 3.5 Mc. Amateur bands.
5. Two (2) points for each 20 DXCC countries confirmed on **each** of 1.8 Mc. and v.h.f./u.h.f. V.h.f./u.h.f. is considered as one band.

The country totals are calculated regardless of the mode of operation, so one country may be counted only once on each band. A.R.R.L. DXCC rules apply for counting the countries. However, official A.R.R.L. DXCC credit is not required.

There are no endorsements. The "XL" Club is sponsored by the Award Hunters' Club International.

Count the points and, if you can claim at least 40, send in your application. Give the following details: Your call, your name and complete mailing address, plus (1) the date of your first transmitting licence (in case there have been interruptions, give the details), (2) the DXCC score confirmed (or credited by the A.R.R.L.), (3) the number of confirmed countries separately on each band (see the calculating table). Finally certify personally that the information given in your application is true. No other certification is necessary; we trust the word of "XL" operators. If false information is given it will spoil the Ham Spirit.

Enclose sufficient return postage (there is no membership fee), and address the application to the Award Hunters' Club International, C/o. OH2YV, John Velamo, Isokaari 4-B-30, Helsinki 20, Finland.

Tell your friends about the "XL" Club. This recognition is really worth working for, and no doubt the "XL" Amateurs will be recognised by all Amateurs as examples of successful operating and loyalty to Amateur Radio. Remember, **Ham Spirit is our Guide Star!**

LOW DRIFT CRYSTALS

☆

1.6 Mc. to 10 Mc.,
0.005% Tolerance, $5

☆

10 Mc. to 18 Mc.,
0.005% Tolerance, $6

☆

Regrinds $3

THESE PRICES ARE SUBJECT TO SALES TAX

SPECIAL CRYSTALS: PRICES ON APPLICATION

MAXWELL HOWDEN

15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA

Phone 83-5090

LOG BOOK

IS NOW AVAILABLE

Larger, spiral-bound pages with more writing space.

Price 85c each
including Postage

Obtainable from your Divisional Secretary, or W.I.A., P.O. Box 36, East Melbourne, C.2, Victoria.

FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Henry Anderson, VK8HA, advises he intends visiting CR8 from 15th to 29th April inclusive and has applied for a licence to operate from CR8.

Outward managers and others please note the change of address for the Norwegian Radio Relay League to Box 21, Refstad, Oslo 5, Norway. This address includes the QSL Bureau.

The L.A.R.C.V. advise of an award to commemorate the 3rd Presidential visit to Cape Verde Islands, 9th to 18th February. Any Amateurs who worked two CR4 stations during that period are eligible. Details from the Federal Bureau.

Will the station who agreed to act as QSL Manager for Dave VK0IA during his sojourn at Macquarie Island this year please contact this Bureau.

The Radio Sports Federation of the U.S.S.R. forwards details of its annual DX Contest to be held from 21z May 4 to 21z May 5. The contest is for c.w. only and all bands 3.5 to 28 Mc. may be used and at least 12 hours of operation is necessary to qualify for an award. U.S.S.R. stations send RST plus Oblast and all others send RST plus serial commencing with 001. Object is to contact as many stations as possible in **any** country but contacts between stations in **same city** are not permitted. Contacts on same **continent** count 1 pt., on different continents 3 points. Band score is sum of contact points multiplied by number of countries worked on that band. Total all band score is sum of scores on each band. Awards of certificates and badges will be made to the highest three stations on each band in each country and similarly to the highest three multi-band stations in each country provided at least five logs are received from that country otherwise only one single band or one multiband award will be made. Logs to Box 88, Moscow, by 1st June, 1968. Any further details required may be had from the Federal Bureau.

As of February 7 the Post Office is just commencing to clear the backlog of 2nd class mail that accumulated during the recent strike. During January cards through the Federal Bureau slumped to 1,500! Writer did not organise the strike but appreciated the let-up enabling his broken leg to get more rest.

—Ray Jones, VK3RJ, Manager.

— . . . —

NEW SOUTH WALES

N.S.W. DIVISION CONVENTION

The Division's Convention was held over the Australia Day holiday week-end in hot summer weather, commencing with the general meeting held at Atcheson St. on Friday, 26th Jan.

The meeting was opened by President-Chairman Keith 2KJ and after reading of minutes a further 17 members were admitted and welcomed to membership of the W.I.A. In reporting to the meeting, Keith said that the postal strike had hampered the delivery of bulletins and the operations of the Division generally. Keith then briefly explained the new membership renewal procedure and gave details of the Convention arrangements.

The meeting was then handed to Harold 2AAH to announce that the Lecturer of the Year Award was won by Howard Lilley, 2AYT, for his lecture on Video Recorders, last year's winner, John Featherstone, being a close runner up. President Finney then presented the prize of the award to Howard.

Harold then announced that the Adams Trophy which is awarded for the best technical article published in "A.R." from VK2 had been won by Frank Hine, 2YL. Keith then presented the trophy, suitably engraved, to Frank to hold this year.

President Keith then advised that the Federal Councillor had some interesting news, however the meeting would adjourn to allow the lecture to commence. The lecture, on Log Periodic Antennae, was given by Dr. Guertler, who, with the aid of sketches, made easy the theory of l.p. antennae, explaining the evolution of the type and ending up with the practical result. Dr. Guertler then showed slides of a commercially made unit rotatable on a 100 ft. tower which can be readily raised and lowered, which has been used by Government services. Many questions followed but resumption of the meeting ended an absorbing lecture well given.

The Federal Councillor then presented his report in which he stated that the forthcoming Federal Convention to be held in Sydney would be an historic occasion as the new Federal Company proposals would be presented and possibly accepted. Coupled with this would be the Region III. meeting of the I.A.R.U. with delegates from the leading Amateur organisations of the world. Pierce 2APQ said that some sessions of these meetings would be open to visitors. His detailed report was duly accepted on motion by the meeting.

Pierce then advised that he was prepared to stand again as Federal Councillor, and was very rapidly nominated and seconded. Chairman Keith Finney then called for further nominations and there being none presented, called a vote, resulting in Pierce 2APQ being elected unopposed.

The Chairman then advised that the Council elections would be held at the April meeting due to the inability of the Division to operate during the mail strike. Keith requested members to read the bulletins carefully regarding nominations, etc. The meeting was then closed and supper served.

CONVENTION DINNER

Some eighty members and friends enjoyed a memorable Dinner on Convention Saturday, 27th Jan. Held in attractive surroundings, with very well set tables and good service, the diners were well entertained under the very capable M.C., Bert Hay, 2AGW. The toast to the Queen was given by Dave 2BSJ, to the W.I.A. and P.M.G. by President Keith 2KJ, and the toast to the visitors by Pierce 2APQ.

The visitors were Mr. and Mrs. J. Striker, W6MOV; Mr. Roll Thomas, FK8AV; Col. and Mrs. Ballantine, VK2AAA, O.C. 8th Div. Sigs.; Mr. and Mrs. Allan, Civil Defence. Mr. Stringer replied to the toast to the visitors on their behalf.

Mr. Striker turned out to be more than the usual guest, a musician of no mean accomplishment, he joined in the trio playing piano and clarinet really hotting things up, so much so that it is understood that some will remember this event for a long time to come.

CONVENTION FIELD DAY

The Field Day was held at the Dural grounds in clear hot weather. An attendance of well over 200 had a good time, including the visitors W4SMZ/DL4SZ/BV1US, FK8AV, VK6ID, and VK4XY; Newcastle, Central Coast and Illawarra Branch members.

During the course of events a Floral Art Display was held for the ladies as well as novelty events. Children enjoyed pony rides while all enjoyed plenty of soft and hard drinks, etc.

The usual display of commercial Ham gear was on to frustrate the OMs while the W.I.C.E.N. Committee provided a clinic for f.m. carphones. OMs complete with odd looking devices were often seen wandering about the bush or driving about in cars during fox hunts and the scrambles. The hot weather, however, kept quite a few under the shelter of trees and canvas.

The complete list of prize winners of the field events will be published in the Divisional Bulletin, however the main winners were as follows: Fox Hunts, 7 Mc.: 2AWZ, 2AWZ; 144 Mc.: 2ZPJ, 2ZVW, 2ZVW. Scrambles, 7 Mc.: 2AWZ; 144 Mc.: 2ZCF. Nail Driving: Mrs. Laws; Ball Game: Kay Laws; Nearest Pin: Mrs. Newland. Gate Prizes: Mrs. Laws, W. Pollock. Distance Prizes: 6ID, 4XY, 2ZZI (Dural). Y.R.S.: D. Fraser, S. Mudge. Raffles: 2AXJ, Mrs. 2RU, 2ATT, C. Fairhall (Assoc.).

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

VK2OB—Lionel W. Mashman.
VK2OE—William M. Allworth.
VK2ANU—Ken Mitchelhill.

MEMBERSHIP CARDS—1968

Each member will be sent a Membership Card which will be used as a record of membership details. It is most important to return the correct half with payment. The card system introduced in this Division is an indication of the new secretarial system introduced in the office procedures recently re-arranged by the use of a full-time Secretary. In spite of extra expenses incurred, and increases in existing costs, Council has decided to hold the fee at $5, but this can only be done if membership increases, so remember the motto, "Every Member Win a Member."

You are requested to check the card carefully, so that Bulletins and "A.R." are sent to the correct address and then time and money are not wasted trying to find you.

SUNDAY BROADCASTS

Due to burned out transformers the Broadcasts from VK2WI have been discontinued temporarily on 3595 Kc., and to enable call backs on 7050 Kc. the Broadcast AT13 on 7146 Kc. has to be retuned to 7050 at the end of the news. As can be appreciated this does not assist the duty operator and listeners should check all frequencies each Sunday to obtain the broadcast and call back frequencies. Installation of new transmitters will very shortly rectify the situation as well as provide the 53.950 Kc. f.m. transmission.

URUNGA CONVENTION, EASTER WEEK-END

Members are reminded of the Urunga Convention to be held over Easter 1968. Being the 20th anniversary of this event, it promises to be an excellent way to spend Easter in idyllic conditions with very attractive prizes for all events. Motel and hotel accommodation can be booked. See bulletin for details.

W.I.C.E.N. NEWS

As a continuance of W.I.C.E.N. policy to enable all Amateurs to have their f.m. gear periodically aligned by competent personnel using accurate test gear, a clinic was held during the Field Day at Dural. A total of 17 units were presented and 14 were suitably doctored, lack of time prevented the completion of the project.

The Western Area Network based on Orange continues to expand with new stations operating from Orange, Dubbo, Eugowra, Blayney and Gulargambone. A proof of coverage is to be held as an exercise on 23rd and 24th March. The exercise will be controlled through the Orange Radio Club's Base on Mt. Canoblas, will encompass the Mitchell and parts of the Lachlan and Macquarie C.D. regions. Many mobile stations will be travelling from Sydney to participate and those willing to assist should contact Brian 2ZQX (Sydney) or Kees 2ZKN (at Orange).

The new Operations Room of the Communications Centre at Atcheson St. is almost complete. Don Miller, 2GN, who headed up the installation team, was responsible for the design, modification and installation of this new showpiece. The room has been attractively appointed with light panelled walls, acoustic tile ceiling and wall-to-wall carpet.

The large polished wooden operating desk comfortably seats h.f., v.h.f. and telephone operators, with fingertip control of 250w. h.f. transmitter, AR88 Rx, all 6 and 2 mx f.m. and a.m. channels, and land lines. Latest model headsets enable operators to be in simultaneous communication without any mutual interference. Following the erection of the proposed rooftop aerial farm, it is expected that an Official Opening will be arranged. 73, Stan 2ZRD.

HUNTER BRANCH

Well I suppose it had to happen eventually. Why even the I.T.U. has made recommendations about it and the date of 1970 has been mentioned. But to have come so quickly and without warning was almost more than one could imagine. Still we must take the philosophical outlook and tune our receivers a little sharper. Yes dear reader, Bill 2ZL has gone sideband. Of course everyone who knows about it is most perplexed but there it is. The perfectly good AT5 and modulator which has

served him so well for so long is to be laid aside in preference for a black box! The prospect of Geordie s.s.b. is with us. Just listen on 80 or 40 at nearly any time and you'll be convinced that what I say is true. And this is not the only rapid new development around the lakeside.

Another Bill, 2XT this time, held a ceremonial pole-raising ceremony early in February to raise to its full height the umbrella quad which has so long languished on a small pole near the shack. A large group of Y.R.S. boys was there to lend a hand with the mechanics and physics necessary to get the big mast—all 70 feet of it—to the upright position with the super quad and a two metre yagi as well on top. To prove that it was really working, Bill broke into some contest working on 28 megs. and the dogpile of Ws that came back was proof enough. And since the Collins went in for a super tune up, I'd say that Jim 2AHT is also in the power truimverate of the Lake Macquarie area. Watch out you DX stations —we're on the air.

As for some of course the most DX they work is on 146 f.m. and there's even a fair amount of that about if one judges conditions by the happenings of late December when all the carphone operators in Newcastle joined the party to work upwards of 10 Sydney stations. About the same time, Dick 2ZSI was having regular battery flattening exercises on the dizzy heights of Dudley and Ian 2ZIO complained that he spent more time on the microphone than on the soldering iron. Oh it was a time of great activity and never a minute of night or day was free from the monitoring ears of the locals. (Phil 2XT did the night shift).

And it was perfectly natural that the very next Branch meeting should be occupied with a learned discussion on the gentle art of f.m. as expounded by Warren O'Rourke, the gentleman who has helped many a Newcastle Amateur to tune up the cranky carphone. Warren showed his absolute mastery of the subject to the quite large audience and the way he handled vector diagrams eclipsed the efforts of such mathematics professors as we have known. Congratulations Warren on a really good lecture.

At the meeting, Les 2RJ announced that he was to be a starter in the John Moyle Memorial Field Day and a great deal of interest was shown from among the S.w.l's but other Amateur activity seemed to be nearly non-existent. Of course there's a reason for the lack of activity among the v.h.f. boys just now; they're all pounding the brass. Since that magical announcement was made the keys in the v.h.f. men's shacks have been running hot. Even one dedicated "phone only and Z calls for ever" type admitted to me that keys could be used for other things than opening doors.

One of the staunchest advocates of Morse for communication and a man who was responsible for the copy-book style heard during the slow morse transmissions, Ken 2ANU, is with us no longer. Branch members were shocked to hear of his sudden death after seeing him looking so well at our last convention. The Amateur Service in general and Hunter Branch members in particular have lost a great friend and a real Amateur. Les 2RJ and members of the Muswellbrook Radio Club represented his many friends who could not be present at the funeral.

If you see a tall, handsome looking gent wearing a fernleaf in his lapel you can bet it's Bob 2BOB who has just returned from a two-week vacation in ZL. Bob is loud in his praise of the friendliness and genuine Amateur spirit of the ZL boys who arranged all his tour in the land of the long white cloud and gave him one terrific time. Frequently our members return from overseas with the same story of super hospitality by their hosts. Does it always happen here?

If you are anxious to repay some of the help you've received then the time is fast approaching. At Easter the Federal Convention, to be held in Sydney, is to be a real international affair with visitors from at least five overseas Amateur Associations. Why not plan now to give these chaps and the visiting delegates from Interstate the reception that they deserve—the sort of thing that Bob and Bill and Jim and Lionel received when they went abroad. I'm sure they'd appreciate it.

David 2GF dropped a bombshell at the last meeting when he announced that he had been transferred to Melbourne and that he'd be leaving the Branch. Frank 2ZFX expressed the thoughts of the members when he told Dave how concerned we are when Branch members leave. We all wish you well Dave and may the Radio Amateur grass be even greener in the southern metropolis.

While the big power men continue to pour on the coal, those with QRP are also busy but in a slightly different way. Stuart 2AYF has been on with the flea power rig and has had some excellent reports while even 2AWX has been reported as having an excellent signal with less than double figures of watts. Another high wire has appeared in Toronto above the house of Bruce Morley while the low wire of Paddy 2AXU is again bringing in good reports. No wire at all is stretched between the poles in Janet Street where Frank 2APO resides, but I have it on some authority that it won't be long before the big signal is on again. So it looks, on the whole, as if most things are moving pretty well.

Why not come along to the next meeting and hear some of these interesting facts at first hand. I may even be able to introduce you to a man who has stood knee deep in 6DQ5s. The date? April 5 will do; at the Tech. See you, 73, 2AKX.

— . . . —

OBITUARY

LIONEL WILFRED MASHMAN, VK2OB

It is with much regret that we record the passing of yet another old-timer from the ranks of Amateur Radio, in the person of Lionel Wilfred Mashman, VK2OB. Lionel had been in ill-health for some time but passed away suddenly on the evening of 8th January.

Licensed at an early age in March 1925, his 43 years' experience in Amateur Radio covered a period of such vast change in the art that would be appreciated only by the comparatively few old-timers still with us.

The 14 Mc. band claimed most of his attention up to 1939, and during World War II. he served as a voluntary instructor at Moore Park Signals Depot, Sydney.

Following the war, Lionel again opened up on 14 Mc., but owing to pressure of business and other interests was not very active. However, his gear was kept in "go" condition and, as a matter of fact, it was always a delight to visit his shack. There was a place for everything and everything was always in its place—something rarely found in a Ham shack.

Another interest that claimed much of Lionel's attention was astronomy, and for some years he was secretary of the British Astronomical Society. In the backyard of his home at Bexley a sliding-roofed building housed a 6 inch telescope, the lens for which he had laboriously hand-ground over a long period of time.

As manager of the Kingsgrove pottery works of F. A. Mashman & Sons, Lionel became very well known throughout the district. He was a kindly and generous man, and the very large and representative attendance at his funeral at Christ Church of England, Bexley, and later at Northern Suburbs Crematorium, testified to the esteem in which he was held by all sections of the community.

Lionel leaves a widow, one daughter and two sons, and to them and their families may we tender sincere sympathy on behalf of all members of the W.I.A. and the Amateur Radio movement generally.

PETER VESPER, VK2PV

Peter was licensed in 1934 and was active on all bands 80 to 10 on c.w. A keen DX operator, he had 300 countries and some 40 awards. After World War II. he was active in the W.I.A. in connection with the N.S.W. Bulletin.

During World War II. Peter saw active service in New Guinea, in the Owen Stanley Ranges. He was a pharmacist, and until his sudden death after a short illness, operated a chemist shop in Sydney.

Deepest sympathy is extended to his wife, son and daughter.

VICTORIA

Council meeting was held on 22nd January, 1968. Council was pleased to welcome two visitors, namely Federal Secretary, 3OR, and the Chairman of the V.h.f. Group, to the meeting. Council had a long agenda to work through and much time was spent on the matter of appointments to Federal Executive, a matter which is causing this Division much concern, so much so that it was resolved to leave the matter open for decision at a later date.

The matter of lack of a broadcast recently was briefly discussed and it was decided the matter would be raised with the appropriate committee. Basically the trouble was the lack of news due to the postal strike. More important was the discussion on the accident to the 40 metre transmitter. Council was informed that an unauthorised visitor gained access to the transmitter room and decided to "go on the air". Not being familiar with the equipment, he operated without an antenna, and the unloaded final "gave up the ghost". By some unexplained means the relay power supply was also destroyed.

Council resolved to have a notice placed in the transmitter room, prohibiting the use of any equipment for purposes other than official W.I.A. broadcasts.

Matters for the Federal Convention agenda were considered and several items relating to the Federal Policy Book reviewed. These matters will be incorporated in this Division's agenda items.

Council gave consideration to the Division's financial position and decided that we would have to raise subscriptions. After a full discussion it was agreed that we would retain the number of classes of membership we have, as it was unreasonable to ask those not in receipt of regular incomes to pay the same as those more financially able to pay. This means we have to subsidise many of our members, and Council considers it preferable to have these members at a lower fee than to not have them at all. We hope all members appreciate the position and will not hesitate to pay their accounts which they will receive shortly. As somebody pointed out, even a full member still pays less than two cents per day.

WESTERN ZONE

The Z call signs in our Zone have been very active during the last few months and doing a fine job for Amateur Radio generally. During the past V.h.f./U.h.f. Contest some have made the 400 contact mark. Together with the full call signs in the northern part of the Zone, they by far outnumber members in the southern section. With the departure of Merv 3AFO and Harry 3ZX, Horsham now has not an active member. Stawell, however, is on the map again, Keith 3AKP has gone s.s.b.

Ray VK9LR has now departed for New Guinea again and will be located in Goroka. He will be looking for yarns on the 14 Mc. band. Sorry to hear that Lyle 3SA (Nhill) has suffered a broken limb while taking part in another hobby. Certainly must be a great thrill Lyle, but you have got what it takes—a lot more than most of us. We wish you best of luck in your sky-diving future. 73, 3AKW.

— . . . —

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

By now, 1967 is history and all club members look forward to a bright and prosperous 1968. A few club members have had annual leave and travelled interstate and around the home state.

S.w.l. Merv went to Cairns by road, but we don't know if he went in his car as we were unable to find the car for the coat of chain mail it was wearing, seems Merv had provided the vehicle with every type of protection possible. I am sure an Army tank is not so well protected as that car was. Another S.w.l., Tom, spent his holidays with relations at Bowral and arrived back with a new car. This one has not been worked over yet, but I do believe the 6 mx mobile rx will have pride of place and XYL Lyn has been banished to the back seat.

The antenna system at the club house has been altered now and we have raised the aerial a further 20 feet, so we hope the results are better and our signal strength has increased by 20 db.

The camping fraternity spent New Year week-end on the banks of Brisbane River near Borallon, and a f.b. time was had. It seemed that some competition was held without the members' knowledge, and was won by Dave 4HW—he claimed the DX award for the camp-out by working a VK5 on 6 mx en route to the camp site—a QSL is necessary before any award will be given!

A very welcome visitor to the club was Roy Spotswood, 4ZWR, Vice-President of Bundaberg Radio Club. He called on us and was to have come back on a meeting night, but was unable to make it due to floods around the Noosa area, seems Roy's car was not equipped with a rudder which would have been very handy.

The proposed get-together camp out between the Bundaberg and our club could be some time in the near future, and the area chosen is near Gympie, so we could see a few Gympie club members there also we hope.

The new 2 mx net is progressing slowly. We now have two stations operating on the 2 mx band and we hope more will join them soon; both 20 and 2 mx are now used for the normal Monday night net.

By the time this is printed, we hope to have one of our old club members back from VK8 land. Bob 8JR has been in Darwin for two years with the R.A.A.F. and is returning home for leave, then possibly a VK2 call sign. Bob called in frequently on our Monday nets and kept up with club news. Another club member, Col 4ZMA, also serving with the R.A.A.F., returned home from Wagga Wagga recently. He never made any 6 mx contacts while away, seems he changed cars and did not install the mobile in the new car.

Seems as if I have said enough for the month, more next month. 73, Warren 4GT.

BUNDABERG AMATEUR RADIO CLUB

When the club was first inaugurated we decided to spell off each Xmas-New Year period. We soon learnt, however, that this usually ended up the busiest period of our year with the v.h.f. bands wide open and the influx of visiting Amateurs. Xmas 1967 really was hectic here, with a decided increase in the activity on 6 mx, both local and DX. There was also a big increase in the number of visitors.

State President Les 4XJ spent several weeks here in his home town and met many of the local chaps. Ex-club member, Murray 2XL, is here on a month's holiday. Murray was at our January meeting and gave a most interesting talk on Radar Technique as applied to Aircraft. George 4ZMG and Danny 4ZDD spent a month or more in town and helped to swell the QRM on 6. Ken 4DG spent several days here and was a welcome visitor to our December meeting.

Bill McIntyre, from the Satellite Tracking Station in Canberra, was quickly found and given a very hectic few weeks by the club members. Bill delivered a very interesting lecture on the subject of Satellite Tracking. Ex-club member, Bob 4ZRG, spent several weeks in town and was often heard on 6 mx. Bob visited quite a few of the local shacks. Other visitors over the holidays included John 4ZJT from Pialba, and also Phillip 3ZZS and Geoff 3ZNA, who were touring around Queensland.

The 6 mx band has been pretty good for most of the Ross Hull Memorial Contest and local 6 mx activity is very high. Club member Bob 4ZZE spent a month or more in VK3 with his parents. We had many contacts with Bob, both on 6 mx and 20 mx. Merv 4MZ holidayed at the Gold Coast. He had a surf board on the hood rack when he left, obviously to enjoy several weeks of both hanging five and the wonderful scenery that the Coast presents at this time of the year.

Frank 4UK caravaned to the South—fortunately, he got home before the rain. Roy 4ZWR spent several weeks at Noosa and Brisbane. Eventually got washed out as did our Club Treasurer, Jim Yarham. We hope the 30 inches of rain did not dampen Jim's and his XYL's enthusiasm for camping as we plan to have at least six field week-ends during '68.

The Xmas Party was most successful in spite of the heavy rain that night, which kept most of the out-of-town visitors away.

Our congratulations to Geoff 4GI, Steve Spotswood and Bob 4UD on the very good passes they obtained in the recent apprenticeship exams. Geoff and Steve are now both tradesmen but have decided to further their studies in their particular fields.

A.O.C.P. and Y.R.S. classes will be resuming early in February and it looks as though the club will be in full swing again soon. The club extends to all Amateurs all the best for 1968. 73, Rusty 4JM.

— . . . —

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held to a capacity attendance of members and visitors, and in view of the fact that the night was particularly warm, and had followed a day of nearly one hundred degrees in the shade, the big attendance came somewhat as a surprise, and it can only be assumed that the lecture for the night was the main reason for the large number.

In the absence of the President, Murray 5ZQ, on holidays, the meeting was chaired by Geoff 5TY, the Vice-President, and opened practically on time. Very little business, Federal, Divisional or otherwise, was on hand and after the distribution of QSL cards by George 5RX and a short smoke-oh, the meeting was called to order for the lecture of the night.

This was in the joint hands of the President and Vice-President of the U.F.O. Investigation, Australia, Mr. Fred Stone and Mr. V. Godic, respectively, who both made it quite plain from the start that no attempt would be made to convince the meeting as to whether U.F.O. —Flying Saucers to you—were genuine or otherwise, no scientific explanations would be attempted, in fact whether the members present believed it or not, or whether they thought it just a joke, was a matter of no concern to them, all they were going to do was to produce all the evidence on the subject at their command, and leave the rest to the common sense of the members.

Mr. Stone then spent a little time on reading from literature on the subject, that he had brought along, all well known names from the space and science world, and after having heard them and just what they said in support of unidentified flying objects, it would have been a brave member of the audience who would have dared to rise to his feet and dispute this part of the lecture.

Mr. Stone then handed the meeting over to Mr. Godic, whom I feel was a little more electronically minded than he led us to believe, who then proceeded to substantiate the subject with slides, more slides, and still more slides, all of which showed in some part of the picture undoubted evidence of flying saucers. There was no doubt about it, the visual evidence definitely backed up Mr. Stone, and was prepared in such a workmanlike manner by Mr. Godic, that again it would have been a brave member of the audience who would have dared to dispute this second section of the lecture.

The lights were then turned on and Mr. Stone and Mr. Godic stood back prepared for the barrage of questions from the members present. The members present were so apparently stunned, or could it be brainwashed? that not one question was forthcoming, and in the somewhat embarrassing silence which ensued, both gentlemen beamed their pleasure at the obvious success of their lecture. Just think of it. the entire meeting completely stunned into silence, what greater success could they have asked for?

One member did recover enough to somewhat shakily ask as to what could be the best thing to do if he should come in contact with a U.F.O. at some time or other, and received the obvious answer "run like the devil!" But aside from this courageous attempt to save the situation, silence prevailed.

In all the years that I have been attending Divisional meetings, I have never seen such an effect that this lecture on U.F.O. had on the audience, and I have never seen an audience so bereft of words at its conclusion. All of which speaks volumes for both lectures and also for the craftsmanship displayed in presenting it. I don't know just what those present thought about the subject of flying saucers, I don't know whether they were impressed, or whether their complete silence at question time was purely due to good manners, but this I will say, no lecture delivered at our meetings has ever had the effect of this one, and I will hazard a guess that the subject of flying saucers is imprinted on the minds of all present, and will remain so for some time, which must have satisfied both lecturers immensely, and also been the cause of not a little secret amusement on their part.

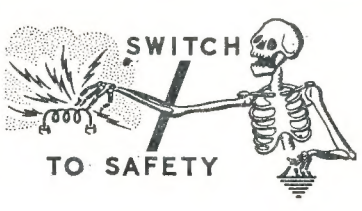
The vote of thanks to the lecturers was ably delivered by Bob 5ZDX and the applause that followed must have been as music to their ears.

Among the very welcome visitors at the meeting were Rex 5HO from Kimba, Peter 3APJ (who was staying with Don 5ZIK), which only goes to prove the old adage "that birds of a feather, etc., etc.," and Barry 8DI who came along with Uncle Joe, 5UJ, and his harmonic. Uncle Joe insisted as being classed as a visitor, but the ease with which he bobs up at the meetings is fast making Port Pirie look like an outer suburb of Adelaide!

Heard Bill 5FR portable at Bright, in VK3, working with Wyk 5WM also portable at Edithburg, on 7 Mc. Both signals much stronger than from their usual locations to me, and I gathered that Wyk was on his last day at Edithburg, whilst Bill seemed to be just settling in.

Gilbert 5GX, he of disposal fame, is at the moment of writing, suffering from a cold and a "crocked" knee, both of which are improving.

Keith 5KH, my faccurite banker, became very technical the other day, whilst on mobile, in describing his exact location. He became very descriptive, as he said, "I am at the moment in the Dead Centre of Mitcham," and qualified it by adding "The Mitcham cemetery." How exact can they get?



However, Brian 5CA went the reverse with his description to some expected visitors by saying "Look out for a dirty two-toned grey Holden, with a big black dog in the back." Did not hear him give the car number, nor the number on the dog's registration disc, so hope the visitors were able to find him to allow him to pilot them in.

Les 5NJ on the day of the motor racing at Mallala was heard en route mobile. Your guess is as good as mine, but I gathered that he must have had more than a passing interest in the sport at one time.

Max 5GF heard saying that he was going away for a few days over the Xmas-New Year period, but "was not taking the mobile." This was a shock to the system, as he is usually well to the fore mobile on such occasions.

Geoff 5TY had a pleasing result after his year's studies, the paper showed his name on top with "credit" well to the fore. His XYL Christine also kept the flag flying with a pass in maths. at the Flinders University. Quite a cultural family, if I might say so.

Heard Jack 5LN mobile on 7 Mc. the other early evening, and from his conversation I gathered that he was just returning from bowls, an annual outing I gathered. He was putting in a powerful signal to me, but when he gave his location I soon woke up. He was only about two or three streets away from my QTH.

The other half of the QSO, Athol 5LQ—how did you guess—seemed to be somewhat hysterical over the fact of Jack being at bowls on a week day, but finally broke down and confessed that he would not have minded if he could have swapped places with him for the afternoon.

My morale was considerably shaken the other day when I heard Wyk 5WK in contact on 14 Mc. with a VK3 and a G station. The reason for the shaken morale was that he was on s.s.b., using a Swan, I think, and he was the one station in VK5 whom I thought would have given me allegiance to the bitter end. He was certainly putting out an effective quack.

Listening to Nobby 5WK and Huck 5JU in QSO on 14 Mc. recently, I could not help but let my memory wander back as to just when I had heard them in contact last. I pulled my memory up at thirty years, it was becoming too nostalgic, but came to the conclusion that it would have been when Huck lived in Kent Town, and Nobby was on top of the Liberal Club building. What a QTH for Nobby, DX-wise. I never stop telling people as to how he went W.A.C. on loop phone from that address.

Had a very short visit from Ted 2ACD over the New Year period. He had been unable to catch me in on a couple of occasions, and just managed to bump into me as I was leaving for work one Saturday morning. Naturally did not exchange many words, and left my XYL to hold the fort for me. I remembered later that he is mates with Jim 5FO and XYL Rae, but I won't hold that against him!

Our Federal Councillor, Geoff 5TY, is claiming that he has lost a stone in weight, and advances the proof that when he was on top of a ladder the other day erecting a new aerial, his strides gently fell to his ankles, much to his mental and physical state of mind. I checked up on the story, and whilst I can find no proof for the loss in weight, I do find that the residents of Fairmont Street are in the process of forming a Purity League, and all cross the road when they get to number 16!!

I may or may not have mentioned it, but Rex 5DO recently changed his car over for another one, and believe it or not the first three letters in the new number plate were REX. At the rate the letters are moving along, by the time I am ready to get my new car, I could be stiff enough to get the first three letters of SSB in my number plate. What a horrible and frightening thought.

Eventually heard from Jack 5LR and pleased to report that he is now well settled in at Victor Harbour, and feels like he has lived there for years. No report on any activity on the air, but it should not be long now.

Received a letter from Bert 5EQ with a couple of news items concerning Youth Radio Scheme activities for use in the "Advertiser" column. Bert is certainly pulling his weight for Y.R.S., and is doing a job and a half on its behalf. Thanks for the news items Bert, they come in handy any time.

Plenty of interstate visitors in and out of our fair city over the Xmas and New Year break. Mobile signals with interstate call signs reached a new high, and many new friendships were formed and visits paid. This is all to the good, as there is no better way to advance our hobby than an eyeball QSO.

Bob 5OD, the Co-ordinator for Y.R.S. in VK5, has agreed to represent our Division at the 1st National Y.R.S. Convention to be held over the week-end of June 1 and 2. This is

an excellent choice on the part of Council, as Bob has been a real battler for Y.R.S. in VK5 over the past months.

The age of miracles is not past, don't you believe it. George 5ZNW has volunteered to act as assistant treasurer whilst Harry 5MY goes on one of his safaris in the near future. Just imagine it—a volunteer from among the ranks—well did you ever, usually they have to be clubbed, or worked over a bit before they even will consider it. Must be quite a man this George.

Our respected President, Murray 5ZQ, last reported on holidays en route to Bright, which is in the dreaded VK3 land. All hope that he will escape detection and be permitted to return, although there was a slight suggestion that he might not make the trip because the boys got at him and filled him up with stories that every three cars out of five fell over the terrible precipices in and around Bright. He finished up quite shaken and as white as a sheet when they finished with him.

Fred 5MA was at the meeting and looking the picture of health. He is not as yet very active on the air, but give it time. Quite a lot of water has flown under the bridge since you used to send me the notes for the magazine down from Berri, Fred.

George 5RX, the VK5 QSL Officer, has been having a quiet time with the mail strike in progress, but is all geared up for the influx of cards when the strike ends. Not many of us realise just how many cards pass through his hands each month, and with the expected backlog to come, he will have his hands full, especially when you consider that chaps like Henry 8HA send them in lots of 500.

Was having a chat with Marshall Hider at the meeting about the passing this week of well remembered radio personality Phyllis Pullman, and we both remembered her from her performances on stage at the 1st radio show in the late 1920's or early 1930's. Incidentally, this radio show was held in the old Exhibition Building on North Terrace, and was organised and run by the VK5 Divisional Council of those days. The Council took a gamble and sub-let the space in the show to all and sundry, and for the entire period it was a sell-out. Rumour has it that the Secretary or Treasurer used to take the nights takings home in a suit case bulging with pound notes. Them were the days, them were!

Much as I don't want to, it looks as if I will have to curtail my notes somewhat this month, cheers from VK6 and VK4, mainly because of the mail situation, plus the fact that my espionage agents have not been feeding their carrier pigeons too well, and the lines of communication have broken down. Twas ever thus.

Len 5ZF seems to have been hiding recently. I heard him say that "he would be more or less leaving it alone this year. The next thing he is hard at work in the Ross Hull Contest. Hope he never decides to "more or less give it a bash!"

A short while ago in these notes it was reported that a quad was up in the air at the QTH of Tom 5MX. It is now no longer there, and what appeared, in the dim light when I was in the vicinity, to be a yagi, has taken its place. A change is as good as a holiday, so they say.

Did you cop the picture of the VK5 DX-peditioner at Lord Howe Island in the December issue of the magazine? Arch 5XK and the island are becoming synonymous now, as he ducks off in that direction at every opportunity, and always seems well pleased with results DX-wise.

John, ex-5ZDZ, now 1ZDZ, recently offered a caravan to W.I.C.E.N., which was gratefully accepted by those concerned. Some work is required upon it before it can be kept as a ready-to-go mobile set-up, but the roof has been strengthened to take four adults, or one Co-ordinator and two adults, providing it is the chief co-ordinator! and there is a 30 ft. telescopic mast with it as well. If you know anything about the building of caravans, or you are handy with tools, run for cover, as Simon Legree, 5TY, is looking for some help along the lines suggested.

One of my spies tells me that he sees Joe 5JT from time to time, and his first words are always, "How is DX?" Joe can be heard going flat out in the early mornings on 14 Mc.

A certain gentleman in VK5, who will remain nameless for technical reasons, is receiving more than his share of QSL cards for 21 Mc. c.w. contacts, especially as he is not on the band!! The recipient of all these cards is wondering is it a case of "who can't read," or "who can't send."

The announcement of the lowering of the speed qualification for the code in the Amateur exam. was well received in VK5 and no doubt everywhere else, to put it mildly. This is quite a break-through for our hobby and also proves that the "backroom boys" are really on the ball.

The VK5 State Convention of the Y.R.S. was held at Elizabeth on the Australia Day holiday, and from all reports was a huge success. Among the delegates attending were Bert 5EQ and Jim 5ZMJ from Port Pirie; Ian from Kadina; Bob 5OD from Christies Beach, who convened the convention; Alan 5FD from Elizabeth; Brenton 5ZKJ from Peterborough; Lloyd from Port Augusta, and Reg 5QR from Nailsworth. Representing the W.I.A. and Council were Geoff 5TY, John 5UL and Trevor 5ZIS. Alan 5FD was appointed State Secretary of Y.R.S., and it was agreed to hold another convention after the June National Y.R.S. Convention to be held in VK3. Definitely a milestone in Y.R.S. for VK5, and the hosts, the Elizabeth Amateur Radio Club, and Bob 5OD the convenor, are to be congratulated on the job they both did for Y.R.S.

Putting two and two together and making it seven. I gather that Leith 5LG was primarily responsible for the members of U.F.O. coming along to the meeting this month and laying everybody in the aisles. If this is so, I take off my hat to him and give him a pat on the back. It was a lecture and a half, Leith.

Just as I was putting these notes to bed, ten little green men have just marched across my window sill, with the front one, a very truculent young man, demanding that he be taken to meet my leader. I have tried to convince him that Pincott 3AFJ is in VK3, and this is VK5, but nothing doing. I also explained that Ken and Joan have just decided to keep a recent visitor from outer space, a cuddlesome little person I am led to believe, and therefore would not be interested in any more visitors at the moment, but still nothing doing. Oh well, I will shovel the ten visitors into the envelope with the notes, and will that give George 3AOM the fright of his life when he comes to sub-edit. Oh dear, oh dear, why did I go to that monthly meeting and listen all about those flying saucers??

73 de 5PS—PanSy to you.

— • • • —

WESTERN AUSTRALIA

Well, here we are again, happy as can be, as they used to sing in the good old song of days gone by.

My spies inform me that, as is usual at this time of the year, many of my would-be victims are absent on leave and nobody seems to be putting a foot out of place. All except one guy that is! I understand that Kim Gates suffered burns on his foot in an accident which occurred while attending a barbecue.

Being at the very antipodes, the residents of Albany made a supreme effort to assert themselves as the radio centre of the Great Southern, or so it would appear. Nearly everyone to whom I have spoken in the last couple of months was either about to set sail for Albany or just returning! Perhaps the highlight of the season was the establishment of a six metre net, mainly due methinks to a little arm twisting by Lewis (first harmonic of Doug 6EP). Another visiting fireman ex-Kalgoorlie, was Percy 6ZDC, whose holiday was unfortunately prolonged by a spell in hospital.

Hospitals and Doug 6EP have almost become synonymous over the last couple of months. Luckily he was permitted to have his trusty Swan close at hand and succeeded in matching up the bedstead as an antenna, enabling him to maintain his lines of communication. Rumour also has it (as yet unconfirmed) that Doug also carried out some research on various hospital vessels as cavity resonators!

These Kalgoorlie types sure get around. John 6ZBY popped into the big smoke (or should it be the big heat?) during the Xmas break. Nice to hear his call on 6 metres again—locally that is.

During the January meeting, those present were afforded the opportunity to ponder a rather absorbing question put by one of the members. It was worded with such skill that I begged a copy of the transcript in order to pass it on to those not fortunate to be present. I have no wish to foul up the very harmonious relationship which exists between the Institute and Radio Branch, so hope this will be taken in the spirit in which it was given.

I quote: "I have a question which is purely rhetorical, and to which I do not expect an answer. Recently the Radio Branch issued a warning to Amateurs, and in particular to those Amateurs who use the v.h.f. bands, against the use of bad language. Particular reference was made to the so-called great Australian adjective. In view of the fact that a recent episode in a British produced t.v. show, telecast by ABW2, featured the great Australian adjective (spoken with a Lancashire accent) 14 times in 25 minutes, is it possible that the authorities have set a certain permissable standard of profanity for public consumption, but will not tolerate the same standard on the comparative privacy of the Amateur bands?"

What do you think? I have only one question myself. What the heck does RHETORICAL mean? Ah well, it's nearly time to start school again anyway.

News to hand that another new settler has arrived on our sun-soaked shores from far off Tassy. VK7DS has decided to cast in his lot with the Sand-gropers. Will it be VK6DS soon? Welcome Hugh.

East-West traffic has been fairly heavy of late. Graham 6ZDB returned to Perth for a brief holiday away from the hustle and bustle of Melbourne town. Others who ventured this side of the rabbit proof fence were VK3ZWA, VK3ZOO, VK3ZPQ.

In order to keep our island in a state of equilibrium it was necessary for some of our fellows to rush to the other side! Among those eastward bound was Dave 6WT peddling the family jalopy, and Jack 6RT making like a bird.

Devaluation? Alyn Maschette, alias "Two-bob Maschette," now rejoices under the call sign of VK2ZAX! Pardon my pun.

During the recent gathering of Boy Scouts in Queensland, many Amateurs throughout the world were privileged to have QSOs with the boys in VK4 land. With so many lads under canvas it is only natural that a few little mix-ups should occur. Was it necessary for a gentleman in one of the more southern states to declare to all and sundry that "We'll show you how it really should be done, when our turn comes round." Okay, pal, we'll all be watching and waiting for your spectacular effort.

Congratulations to Doc 3AVM, ex 6AQ, on his recent appointment as headmaster of St. Kevin's College, Toorak. Doc has really been amongst the DX while holidaying at Lakes Entrance and jockeying his new Galaxy.

Congratulations are also the order of the day for Neil 6ZDK, our new Federal Councillor. Good luck Neil and thanks to the retiring member Roy 6RY.

See you later, gang. 73, Ross 6DA.

Stockists of Radio and Electronic Components for the Amateur Constructor and Hobbyist

First Ring, Write or Call on

WILLIAM WILLIS & Co. Pty. Ltd.

430 Elizabeth St., Melbourne. Ph. 34-6539

Repairs to Receivers, Transmitters; constructing and testing; xtal conv., any frequency; Q5-ers, R9-ers, and transistorised equipment.

ECCLESTON ELECTRONICS

146a Cotham Rd., Kew, Vic. Ph. 80-3777

HAMADS

Minimum 50c for thirty words. Extra words, 2c each.

Advertisements under this heading will be accepted only from Amateurs and S.w.l's. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. **Copy** must be received at **P.O. Box 36, East Melbourne, Vic., 3002,** by **5th of the month** and **remittance must accompany** the advertisement.

FOR SALE: Geloso G222TR Transmitter and Geloso G209 Receiver. $100 each. Perfect order, manuals. Arnold Holst, VK3OH, 10 Flintoft Ave., Toorak, Vic., 3142. Phone 24-2961 or 62-3232.

FOR SALE: Table Top 10-80 Metres Tx, professional appearance, Geloso v.f.o., 6146 final, 807 AB1 modulator, separate 3-section power supply; Marconi CR100 Rx, 6 and 2 metre Converters in one case; $150 the lot, o.n.o. Wanted to Buy: G.d.o. and Vacuum Tube Voltmeter. VK3AHG, 20 Grandview Rd., Box Hill South, Vic., 3128. Phone 288-2024 (Melbourne).

FOR SALE: Vinten MTR4 low band f.m. Fully converted to 6 metres. Two stage 1st i.f. 6 watts out. $25 o.n.o. Phone 317-7579 (Melbourne).

SELL: Topaz C10XL d.c. to d.c. 260w. Converter. Output 800v., 280v., —90v. $55 W. Sebbens, P.O. Box 157, Charters, Towers, Qld.

A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

- **TECH TO3 3" OSCILLOSCOPE**
  Specifications.—**Vertical Axis**: deflection sensitivity, 0.1v. p-p/cm.; freq. characteristics, 1.5 c/s. to 1.5 Mc.; input impedance, 2 megohms, 25 pF.; calibration voltage, 1v. p-p/cm. **Horizontal Axis**: deflection sensitivity, 0.9v. p-p/cm.; freq. characteristics, 1.5 c/s. to 800 Kc.; input impedance, 2 megohms, 20 pF. **Sweep Osc.**, 5 ranges: 10-100 c/s., 100 c/s.-1 Kc., 1 Kc.-10 Kc., 10-80 Kc., 50-300 Kc. **Synchronisation**: Internal (negative or positive), external, or line. Cathode ray tube, 3KP1F. **$136.00.**

- **TECH TE40 MILLIVOLTMETER**
  AC volts: 0.01, 0.03, 0.1, 0.3, 1.0, 3, 10, 30, 100, 300. Accuracy: 5 c/s. to 1.2 Mc. ± 2 db. (db. scale +2 to —25 db.); 10 c/s. to 1 Mc. ±1 db.; 20 c/s. to 250 Kc. ±0.2 db. db. scale: —40, —30, —20, —10, 0, +10, 20, 30, 40, 50 dbm. **$59.25.**

- **TECH TE65 V.T.V.M.**
  DC volts: 1.5, 5, 15, 50, 150, 500, 1500. AC volts: 1.5, 5, 15, 50, 150, 500, 1500v. r.m.s.; 1.4, 4, 14, 40, 140, 400, 1400, 4000v. p-p. Resistance: R × 10, 100, 1K, 10K, 100K, 1M, 10M. Decibel: —10 db. to +65 db. **£50.00.**

- **MILLER 8903B 455 Kc. PRE-WIRED I.F. STRIPS**
  Comprises two i.f. stages, diode detector, in-built a.v.c, 55 db. gain, NPN silicon transistors. DC requirements, 6 v.d.c. 2 mA. Size, 1½" x ½" x ½". **$8.70** inc. tax.

- **STAR SR700A AMATEUR-BAND RECEIVER**
  Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.6-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Triple conversion: 1st i.f., 3.4-4.0 Mc.; 2nd i.f., 1650 Kc.; 3rd i.f., 55 Kc. Sensitivity: a.m. less than 1 uV. for 10 db S+N/Noise Ratio; c.w./s.s.b. less than 0.5 uV. for 10 db. S+N/Noise Ratio. Selectivity: 0.5 Kc., 1.2 Kc., 2.5 Kc., 4 Kc., all at —6 db. In-built 100 Kc. Crystal Calibrator (crystal supplied). **$461.50.**

WANTED TO BUY

Communication Receivers, Test Equipment, etc. Call, write or phone Equipment inspected and picked up at your convenience any night or week-end.

- **STAR ST700 SSB TRANSMITTER**
  250w. p.e.p. Employs high efficiency AB2 final. Incorporates vox, p.t.t., mechanical filter for max. suppression. Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.5-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Emission: CW, LSB, USB, AM with carrier injection. In-built c.w. sidetone monitor. Clickless keying with unique tone osc. system (no keying of relays). **$519.20** inc. tax. Note: SR700A and ST700 couple together for complete transceive operation.

- **VALVE SOCKETS, P.T.F.E.**
  7-pin complete with can, **20c ea.**; 9-pin complete with can, **50c ea.** Ideal for 144 or 432 Converters or Tx's.

- **ELECTROLYTIC CONDENSERS**
  50 uF., 125v.w. pigtail type. Late manufacture. **20c ea.**

- **A111 9 Mc. SSB EXCITER**
  A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates vox amplifier and relay amp. Price with KVG. **XF9B** Filter, **$240.**

- **A112 5 Mc. VFO**
  Freq. coverage: 4950 to 5550 Kc. Freq. stability better than 100 c/s. over 12 hrs. long term; better than 8 c/s. over 10 mins. if enclosed in suitable box. Output: 350 mV. on 220 ohm load. Price **$22.**

- **EICO 753 TRI-BAND SSB TRANSCEIVER KIT**
  180w. p.e.p. on SSB or CW, 80w. on AM. 5.2 Mc. crystal filter. Sideband sup., —40 db.; carrier sup., —50 db. Receiver sensitivity: 1.0 uV. for 10 db. signal to noise. Receiver selectivity, 2.7 Kc. at 6 db. 10 Kc. receiver off-set tuning. Printed circuit i.f. strip. Pre-aligned xtal filter. Freq. coverage: 80 mx, 3490-4010 Kc.; 40 mx, 6990-7310 Kc.; 20 mx, 13890-14410 Kc. (LSB 80 and 40 mx, USB 20 mx). Price **$328.78.**

- **PETERSEN RADIO PR100 CALIBRATORS**
  Comprising 1 transistor 100 Kc. crystal oscillator, 1 transistor emitter follower, fibre-glass printed circuit board, trimmer on crystal for zero beat with WWV. Crystal accuracy 0.005%. Power requirements, 15v.d.c. 14 mA. Price **$22** inc. tax and plus postage.

- **K109 SWR METERS**
  75 ohms or 52 ohms input and output. SWR 1 : 1 to 1 : 10 ±3%. 100 micro-amp. meter. **$18.50.**

- **CO-AXIAL CABLE**
  UR70, ¼" diam., 72 ohms, supplied with Belling Lee Connector. **27 yards $2.00.** Post and packing 75c.

- **RESISTORS**
  Wide range of values available in ¼ watt, ½ watt or 1 watt. Welwyn, I.R.C., Ducon, and Erie. **$2.00 per 100.**

- **CAPACITORS**
  Miniature 600v.w. pigtail type: 0.001, 0.005, 0.0002, 0.0005. Also Ceramic. **$2.00 per 80.**

- **POTENTIOMETERS**
  Wire-wound, 100 ohms to 100K ohms, 1 watt to 3 watt. **40c ea.** Carbon, 100 ohms to 5 megohms, **20c ea.**

- **VALVES**
  New Philips: QB/250 (813), $10; 815, $1; 807, $1.50; TZ40, $1.50; 416B, $4; VR150/30 and VR105/30, 75c ea. or 3 for $2; ECC33 (6SN7), 40c.; 6AM5, 50c; 6AC7, 20c or 12 for $2; 6K8, 75c or 3 for $2; 6J7, 40c or 6 for $2; 6J6, 50c or 5 for $2; EF50, 20c.

- **TELEMAX T75 FREQUENCY METER**
  85 to 1,000 Mc. Heterodyne type with 5 Mc. internal standard. VHF version of BC221. Immaculate condition. **$150.**

- **PANEL METERS, P25 TYPE**
  100 uA., $6.95; 500 uA., $5.25; 1 mA., $4.50; 10 mA., $4.50; 50 mA., $4.50; 100 mA., $4.50; VU meter, $6; S meter, $4.80.

ALL ITEMS FREIGHT EXTRA

UNITED TRADE SALES PTY. LTD.

280 LONSDALE ST., MELBOURNE, VIC. (Opp. Myers) **Phone 32-3815**

PRINTED CIRCUIT

CRYSTAL CONTROLLED OSCILLATORS

RANGE: 1.5 Kc. to 100 Mc.

PYE PTY. LTD. has produced a range of Crystal Controlled Oscillators, of known stability and guaranteed outputs.

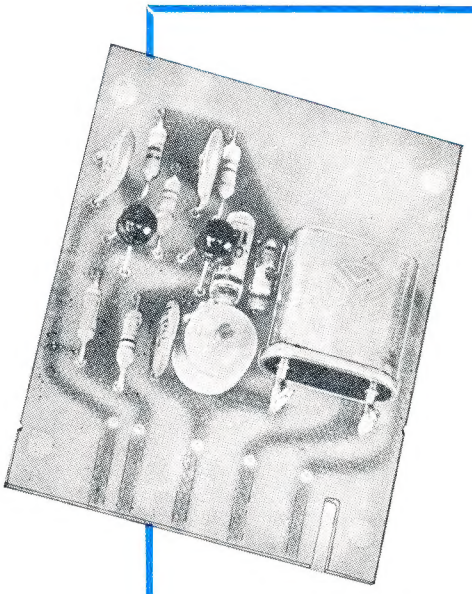
These oscillators, using printed circuit technique, are intended for incorporation as complete sub-assemblies in major electronic equipment or for use individually as frequency marker or reference oscillators.

They have been created to relieve the electronic equipment designer of the invariable time consuming task of oscillator design and layouts.

Types now available are:—

					Nett
XL687	1.5	Kc.	to	6 Kc.	$35.50
XL683	+ 6	Kc.	to	50 Kc.	$30.00
XL681/A1	+ 50	Kc.	to	60 Kc.	$21.50
XL681/A2	+ 60	Kc.	to	75 Kc.	$21.50
XL681/A3	+ 75	Kc.	to	150 Kc.	$19.80
XL682	+150	Kc.	to	525 Kc.	$14.00
XL692	500	Kc.	to	1 Mc.	$20.41
XL688/A1	+ 1	Mc.	to	6 Mc.	$12.50
XL688/A2	+ 6	Mc.	to	20 Mc.	$10.50
XL690	+ 20	Mc.	to	60 Mc.	$10.50
XL691	+ 60	Mc.	to	100 Mc.	$12.00

Optional extra — In-line Socket Part No. 67-536 $0.56



PYE XL688. Size: 2.5" x 2"

PYE PTY. LTD.

Q.C.B. APPROVED ORGANISATION

AUSTRALIAN MADE

P.O. BOX 105, CLAYTON, VICTORIA, 3168

Phone 544-0361 TELEGRAMS: "PYTRONIC" MELBOURNE

Brisbane, Sydney, Adelaide, Perth, Hobart, Canberra, Geelong

DYNAMIC MICROPHONE & STAND

★ *LOW PROFILE* ★ *COMPACT* ★ *STABLE*

SPECIFICATIONS:

Impedance: 50 ohms, 50K ohms
Frequency Range: 80 to 12 Kc.
Output: —55 db. (0 db. = 1V./dyne Cm2)
Switch: D.P.D.T. P. to T.
Housing: Angle adjustable

ROBUST BASE STATION P.A. MICROPHONE

TYPE 45

ZEPHYR PRODUCTS PTY. LTD.

70 BATESFORD ROAD, CHADSTONE, VIC., 3148 Phone 56-7231

Manufacturers of Radio and Electrical Equipment and Components

W.A.— S.A.— Tas.— N.S.W.— Qld.—

Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L.; Jacoby, Mitchell & Co. P/L.; T. H. Martin P/L.